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The Proportional Harmony of Utility and Grace.

THE circumstance that architecture is both a useful and a fine art places it in a twofold dependence on considerations of proportion. It is manifest that, so far as utility and convenience are concerned in the design of a building, proportion of parts must be considered and studied assiduously no less than in the works of a watch or the construction of a steam-engine. Nay, certain calculations of proportion have to be entertained before the details of design come positively into question:—

> "When we mean to build
> We first survey the plot, then draw the model;
> And when we see the figure of the house,
> Then must we rate the cost of the erection:
> Which if we find outweighs ability,
> What do we then but draw anew the model
> In fewer offices, or at least desist
> To build at all?"
>
> *Henry IV.*, Part II.

In such preliminary deliberations an important problem will usually be the relative value to be conceded to the directly useful and to the graceful. There is a familiar point of view from which grace and beauty tell as matters of usefulness. The value in use of, let us say, a hospital, seems measurable by the accommodation it affords for furthering patients on the way to alleviation or cure; yet there is no doubt whatever that a sum which would extend it by an additional ward may sometimes be wisely and economically diverted to giving the structure architectural distinction on a conspicuous and even expensive site; by such conciliation of popular regard for dignity are attracted the voluntary subscriptions, without which even what wards are retained could not be adequately supported.

And quite as rationally, or even more so, the private individual who seeks to house himself agreeably is wont to sacrifice some extension of internal convenience for the sake of certain enjoyment to be derived from devoting a balance to external embellishment. The question is manifestly one of proportion and estimate of appropriate proportion; if resources will only extend to providing merest necessities of convenience, of course no question of the kind arises; fine art has no standing ground, and the coarser utilities can alone be consulted. But otherwise, although mere creature comfort, if encouraged and indulged, would be ready enough with a list of still unsatisfied claims, the point may easily be arrived at even by the too studious of personal ease and luxury, where further concession in this direction would involve disproportionate sacrifice in another. Even with the sordid, if not with the necessitous, the beauty of a tree may counterbalance its value as timber. There is incongruousness, which is disregard of proportion, in the splendour of the interiors of some entire streets of London houses, and the unmitigated blankness of the exteriors.

Still a legitimate scope is to be allowed to diversity of individual taste in the apportionment, within limits, of interior and exterior decoration; and as regards interiors alone, the proportions of apartments are as fitly as necessarily accommodated to individual tastes and purposes. An unusual, but not, therefore, extravagant, share may be assigned to a library, to reception-rooms,—nay, even to billiard and lounging rooms or conservatories. Whether, in any particular case, a balance is preserved which merits the title of harmonious combination, depends on a moral consideration,—is to be declared accordingly as it does or does not represent a self-consistent and worthy balance of purposes and preferences in the occupant's disposition. In the superior town-houses of the wealthy class in London of a former date, we constantly find the reception-rooms and grand staircases magnificent and most liberally spacious; but rooms for lodging the necessarily numerous household, and for children younger or elder, are pinched to an extent that cannot be justified by any theory of harmony whatever. The London we inherit is not wanting in examples of the forfeiture of internal advantages for the sake of supposed and often of successful external effect; the too rare and scanty sunbeams of an unfavourable aspect are intercepted by an unnecessary colonnade; windows of upper rooms are too high or too low,—are near the ceiling or down on the floor,—and enlivening views are cut off by the excessive projection of a cornice.

The reign of all that is inimical to proportionate harmony is complete when interior convenience is sacrificed for an exterior effect that is not beautiful after all, and in place of advantage there comes gratuitous aggravation.

The example of St. Paul's, however, may be adduced for a legitimate and successful solution of a problem of compromise. The dignity of the exterior was here of more universal importance than internal finish; and one having to give way of necessity, Wren justly gave the balance in its favour. Types of vulgarity are presented by glaring mimicry of magnificence out of reach,—great portals to little houses, towers to cottages,—shall we say churches and chapels that look like cathedrals in little?—all cases of dwarfs assuming the style and airs of the gigantic: frogs puffing themselves out to rival a bull; jays parading in misfitting suits of peacocks' feathers.

The ultimate generative principle of harmonious design must, therefore, be harmony of purpose,—the conception of an object,—of an ultimate result to be attained by appliances of greater or less elaboration and complexity; as purposes of any considerable scope and dignity must needs involve complex elements, but simple and self-consistent and self-coherent in virtue of a chief concernment which effectually dominates the supplementary and subsidiary. Nature is rife with examples of such harmony in complexity. In any particular animal we choose to make the subject of study, we find the main purpose of the preservation and continuance of a species provided for by endless adjustments to special environments and conditions of existence; the organism is suited for the search, capture, and digestion of particular kinds of food, for protection against special vicissitudes of climate, for self-defence against enemies endowed with certain instincts by counter instincts and faculties for flight or conflict, for the production, care, and rearing of offspring.

The simplest conception of a dwelling-house gives a parallel in art,—materials have to be distributed for support, protection from weather, —ingress, egress, admission of light and air,—various apartments, variable in size and position, to subserve separate and combined purposes, kitchen, nursery, bedrooms, living-rooms, study, and so forth, halls, passages, staircases, according to the type of requirements and circumstances of the occupant.

These general considerations may be sufficient to guide to rough determinations of relative distribution and proportion, especially when precedents and models are tolerably plentiful and accessible. A house, after all, does not absolutely depend for ordinary usefulness upon proportionate adjustments so universal and minute as are required in a chronometer, or as exist in the living organism of a bird or a human being.

Even the very worst mischiefs of ugliness, as well as of inconvenience, may be avoided with considerable success in this inartificial process of design. When a door has been contrived wide enough and high enough for convenient entrance, "general look" may prompt to a modification of dimensions which will render it agreeable, and be adopted on that account solely and simply. And even in the same way the adaptation of one part to another may,—when natural sense of proportion exists,—be very effectively combined. This is what we know occurs when one endowed with a natural ear for music sings precisely the right note to be second to an educated singer.

But the last and the refined finish of music is not to be achieved in this instinctive and spon-

taneous fashion, even by executants; and as to composers, a close and exhaustive study of theory is essential if they are to produce truly finished and harmonious compositions.

To what extent is such precision desirable, if not indispensable, in architecture? The observance and the value of observance of precise proportion in the matter of bilateral symmetry is obvious enough. The expression, and the value of the expression of equilibrium and stability in cases where, as in the disposal of vast weights and masses, stability is all-important, are self-evident. The necessity or advantage of precise proportional divisions of the superposed members to each other, though the advantage of a general order of gradation may be manifest, is by no means so self-evident.

As regards vertical distribution, indeed, there is the question whether any value of accurate proportional distribution is not at once done away with by the disturbing effect of perspective at all but very great distances. The case stands thus:—

Let the height of a spire be exactly equal to that of the tower it springs from, it will not tell as equal to it, and at every change of distance of the speculator the proportional difference will vary. What, then, is the value of the precision?

Inevitable and important points of view will often prescribe certain adjustments. Sir Christopher Wren may have rightly enhanced the drum of his cupola in order to present the cupola in happy composition when seen from an approach on the slope of Ludgate Hill.

Of the necessity for taking perspective diminution of remote parts into serious consideration, and making due allowance for it, there can be no doubt whatever; but this consideration alone does not reply to our difficulty. The ancient statuary knew that in a colossal figure it was necessary to give an unnaturally large dimension to the head if it was not to appear disproportionately small; but he may still have thought it necessary to adhere to some definite proportion as to make it one-seventh of the full stature of the figure instead of only one-eighth, and instead of enlarging it independently of any precise commensurability. It may be recognised that a spire must be more than equal to the height of its tower, if it is to tell as equal, but there may or may not be an advantage in enhancing it in execution by some definitely-proportioned difference.

The question seems to be one which it is difficult to decide dogmatically,—the difficulty is equally presented, though in more moderated form, when we deal with dimensions nearer to the eye,—the area of a hall or its height and breadth relatively to its length.

Is it a sufficient reply to say that, inasmuch as effect in design requires that certain differences and even gradations of differences should be manifest,—should tell,—in virtue of differential dimensions, it is more systematic to regulate those differences with numerical precision than merely at guess and at random?

At any rate, it may be said, will not simple commensurability serve our turn? Let larger divisions be divisible by a unit of 6 in., and others by 3 in. or by even ¼ in. or ½ in. The divisions of the foot-rule will always then avail for guidance in execution. If we propose to adhere to precisely derived proportions, we shall inevitably and constantly be thrown upon dimensions which are not coincident with any subdivision marked on the carpenter's rule.

Mechanical convenience, however, must not block the way when we are in pursuit of theoretical principle. If there is a fair presumption in favour of the theory it must be worked out strictly, whatever laxity in application may afterwards be indulged in or winked at, as winked at hard it is in the equal temperament of the piano and the organ. Theoretical rigour is incumbent on the present occasion, when it is proposed to pursue the study not only under the guidance of original observation of nature, but also of the Greek, who, as interpreter of nature, will be found to have repudiated conformity to fixed subdivisions of any standard measure.

It can be shown by authentic examples of ancient practice that the most distinguished of the Greek architects accepted axioms such as the following as certified by a natural guarantee:—

1. The peculiar value of precise proportions most precisely executed.

2. The especial value of proportions of low numbers.

3. The value of ratios of decided but not excessive difference between the terms.

4. The value of a scale or series of proportions limited in number and combining distinctness with continuous gradation.

There is something more than prejudice, more commendable than regard for habit and tradition, in the deference thus paid to the Greeks. The architectural designs of the Greeks, even when adhering to one common general type, are in every case distinguished by visible peculiarity of proportion even in works of the same architectural style. The beauty of the designs is not more spontaneously and cordially recognised than the dependence of that beauty on proportion; both have been admitted frankly by one generation after another, and yet the secret of the application of proportion,—it has as frankly been admitted,—has ever eluded research. The Greeks, it is clear, had penetrated by genius and by study to the arcana of Nature, and we may hope to gain help towards seizing the same clue by interrogating them through their works, while by addressing ourselves at the same time directly to considerations of natural propriety we may sometimes gain a first hint that will put us on the track of the Greeks.

The statements thus advanced as to the practice of the Greeks will be abundantly justified by instances and illustrations to be adduced hereafter; but in order to appreciate these it is desirable in the first instance to set down a clear statement as to the primary elements for the construction of a scale of proportion upon one principle or another, the natural basis of true theory, ancient or modern. Every possible variety of proportion is included, as already mentioned, between absolute equality, 1 : 1 on the one hand, and absolute disparity, 1 : 0 on the other. Quantities are either equal or unequal, and it is clear that in whatever proportion we make one quantity greater than another, we do but arrive at a ratio which would have been encountered, only with reversal of the terms, had we made it in a certain degree less. If we commence with two equal lines and alter one by successive diminutions, the proportional differences will be the same as if one had been successively enhanced. The comparison of a quantity and its half, or a quantity and its double, gives the same ratio, 1 : 2; and so of any greater or less differences. The adoption of a scale of proportion involves the limited selection of certain ratios intermediate between the extremes, supplying the required diversity and gradation, and governed by reference to the peculiar application which is to be made of the scale. The diatonic scale of music supplies a familiar example of series of proportions of special suitability which, taken in one direction, advance from equality to double, and, in the other, proceed by parallel stages from equality to the half. The middle C of the piano is produced by half the number of vibrations that produce the C an octave higher, and by double the number that produce the C an octave below it; and the intermediate notes of each octave have corresponding relations.

The stages of advance are marked by the proportions of the following series, in which the numerator expresses the same constant number of the vibrations that produce the middle C, while the denominators mark the relative number of vibrations that produce the successive concordant notes:—

$$\frac{1}{1} \quad \frac{8}{9} \quad \frac{4}{5} \quad \frac{3}{4} \quad \frac{2}{3} \quad \frac{3}{5} \quad \frac{8}{15} \quad \frac{1}{2}$$

The progressive character of these ratios becomes more manifest by reduction:—

$$\frac{8}{8} \quad \frac{8}{9} \quad \frac{8}{10} \quad \frac{8}{10{\cdot}66} \quad \frac{8}{12} \quad \frac{8}{13{\cdot}33} \quad \frac{8}{15} \quad \frac{8}{16}$$

In this series we observe certain very simple ratios which are inevitably required and appropriate in some application or other whenever proportion is applied to any art;—they are those which have a difference between their terms of unity, $\frac{1}{2}\ \frac{2}{3}\ \frac{3}{4}\ \frac{4}{5}\ \frac{5}{6}$; but the series, even so far, it will be observed, is not numerically consecutive; the ratios $\frac{6}{7}$ and $\frac{7}{8}$ and $\frac{9}{10}$ are absent; this is due to the physical nature of resonance from which the series is deduced which excludes these ratios, fully applicable as they are in other arts, while the same cause inevitably induces the insertion of such a ratio as $\frac{8}{15}$, and others that seem still more anomalous in the series. Laying out of sight the particular ratios of this scale as having special propriety in a different connexion, we may still study its general characteristics with advantage.

We observe that it consists of a limited series of ratios taken out of an unlimited number possible between the two extremes, and it will be further observed that there is an approach to an average in the intervals between the consecutive ratios. The principle of this scheme is such as must be of value in the employment of any system of proportion in any art; it is, namely, that while a variety of proportions becomes available for a variety of applications, each acquires a power of relief by well-defined contrast with its associates,—a distinct character is preserved for each in succession in virtue of not being liable to confusion with others around it that are only slightly different.

Let us illustrate this by examining a scale of ratios of which the terms proceed by a common difference of unity, as thus:—

1 : 2 — 2 : 3 — 3 : 4 — 4 : 5 — 5 : 6 — 6 : 7 — 7 : 8 — 8 : 9 — 9 : 10

It is clear that the series is advancing towards equality between the terms, which, however, so long as the common numerical difference is observed, it can never reach; it is also manifest on consideration that at each advance the relative difference of the terms becomes less and less. The ratio 1 : 2 gives a double square; 4 : 5 gives an oblong that only exceeds a square by a fourth; while 9 : 10 gives an oblong which exceeds a square by no more than a ninth. The difference between an excess of an eighth and a ninth is trivial compared with that between a third and a fourth.

Distinctness and decision, — conditions of artistic effect, — could, therefore, be obtained from employment of such a scale only by the entire suppression of some of the ratios set down, and by insisting preferentially on the employment of others.

The same remark will apply to the construction of scales which proceed by common difference between their terms of other numbers, for example:—

1 : 3 — 2 : 4 — 3 : 5 — 4 : 6 — 5 : 7 — 6 : 8 — 7 : 9 — 8 : 10
1 : 6 — 3 : 7 — 5 : 8 — 7 : 9 — 9 : 10 — 11 : 12 — 13 : 14 &c.

As these series advance, omissions must be made, or all sense of pronounced distinction will be obliterated.

The cases of proportion in respect of dimension which come directly into consideration in architectural design appear to be such as these:—

1. Proportion between divisions of the same right line; as between the relative height of stories; between the height of a column and of the entablature above it; between the diameter of a column and the width of the adjacent intercolumn. This may be conveniently called Rectilinear Proportion.

2. Proportion between the sides of a rectangle; that is, between lines at right angles to each other, like those which measure the length and breadth of a plan, or the breadth and height of an apartment; the span and loftiness of an arch. Such comparisons may be referred to as cases of Rectangular Proportion.

3. Proportion between areas, whether taken on plan, as between vestibule and apartment, or on elevation, as between the superficial extent of the centre and the wings of a composition. As regards the comparative areas of circles, it will be found that the Greeks were aware that they are to each other in the ratio of the squares of the diameters.

4. Proportion between masses,—that is, between solid contents, independently of consideration of weight. Such comparisons may be instituted between the mass of a solid podium or basement and superstructure, or between a vertical tower and the horizontal mass of the building which it may be attached to.

One of the resources which proportion furnishes for combining variety with unity in a manner which, latent though it may be, and unrecognised, still tells upon effect, consists in the application of any single ratio of a scale in the three forms,—rectilinearly, rectangularly, and to area; and then again by its application to right lines and rectangles of different absolute dimensions, and sometimes horizontally, as on plan, or vertically, as in elevation. To take the simplest illustration: the oblong of a double square (1 : 2) may be repeated on plan in apartments of the greatest diversity of area, or on the sides or shorter ends of apartments; or the full height of a façade or of a particular architectural member may be divided in such a way that the height of one part is double that of the other; or, again, the breadth of one member may be double the breadth of another, and so forth. And a like series of changes may be rung upon any other ratio of the selected

series, and a given dimension may be made a term in two ratios, as when the height of a room compares with its length in one ratio and with its breadth in another.

The possible scales being thus indefinite and multifarious, what help or suggestion is available for the adoption of a particular scale for particular application? To this it must be replied that a design for a definite purpose will usually impose certain limits of proportion for the most important divisions or members of a design; it is upon these necessities of the case, which have to be studiously sought out and studied, that the character of the composition will essentially depend, and to them subsidiary proportions will have to be accommodated, either absolutely or by a process of give and take, in the course of which process the proportions generally may become defined, though ever with least concession on the part of the main conditions of the problem,—the dimensions and proportions of the primary requirements.

But, again, when the conditions of the architectural problem do not impose, to use the language of Kant, a "categorical imperative," and when imagination is responsible more independently for an effective model, the determination of conditions which are to control general proportions is the primary consideration. If the imagination of the artist is possessed with the beauty of a general conception, this beauty which captivates him is most certainly connected with an essential congruity of which it behoves him to penetrate the secret with such exactness that he can assign precise dimensions to a composition that shall realise it; shall

> "Turn it to shape, and give to airy nothing
> A local habitation."

A truly poetic architectural conception hovers before the mind as fitfully as the conception of a beautiful and characteristic face before that of a painter. Let a painter tell of the wrestlings of his spirit before the precise outline is on his easel which satisfies him as doing justice to the idea as it revealed itself to his thought; the architect is likely to have his own trials between the time when he first in hot haste put down a rough draught that seemed to fix the principle of his suggested composition, and that still intermediate stage when he can rest with assurance upon the decision of certain leading proportions between parts as securing his main intention and providing the governing key for all that is to follow.

This now seems to be as far as we can safely advance towards a theory of architectural proportion by the "high *priori* road." In any case, under the conviction that we have in the works of the Greeks some successful examples of the application of such a theory, it is more convenient and probably more convincing to pursue our exposition from this point with the assistance of realised examples, and to connect recondite theory with practical adaptation as we go on, having regard to the very just Baconian theorem,—"Knowledge which is drawn from particulars entereth more easily into particulars again."

THE PERGAMON EXCAVATIONS.

THE first series of excavations at Pergamon, which resulted in the recovery of the essential portions of one of the most remarkable pieces of sculpture of antiquity, to wit, the altar erected at that place, representing in its decorations a Gigantomachia, or battle of the Gods and Giants, have been followed up by a subsequent series upon which the official report has recently appeared. The engineer, Herr Karl Humann, has been principally instrumental in accomplishing this important rescue, and obtaining it entire for the German Government, by whom the altar has been placed in the Berlin Museum, where it now stands restored. In the report referred to, Herr Humann gives an account of the operations of the second campaign, in which some important fragments of the work which had been missed in the first series of excavations were recovered. He gives a description, with illustrations, of the mound where the relics of the altar were found. Among the later discoveries were two statues of Athene, —one of colossal size, being more than 9 ft. high, and the other rather over the average height. Both these works are believed to have been copied from Athenian originals belonging to the fifth century B.C. There were likewise found in the second series of diggings no fewer than 198 inscriptions and fragments of inscriptions, most, but not all, of which will be placed in the Berlin Museum. The great altar stood on the lowest of three terraces on the southern side of the western portion of the hill at Pergamon. On the uppermost terrace there was in ancient times a temple of Augustus, which the excavators dug out during the first campaign. On the middle terrace there was a temple of Athene on one side, and a two-storied hall on the other side. The upper story of this building consisted of an open gallery of pillars, between each of which there were plates in relief representing all sorts of antique weapons. These plates and their decorations form quite an encyclopædia of ancient arms. Twenty have been recovered in a good state of preservation, and they have already been cleaned and placed in the Berlin Museum. One of the illustrations is a rarity, consisting of a visier helmet, with a complete mask for the face. The report contains a view of the locality where the relics have been found, and a picture representing the buildings and altar as reconstructed, and the appearance they presented at the period when Pergamon was in its prime. Herr Humann believes that there are still many relics buried in the earth in this locality, and he says he hopes to be able to carry out a third series of excavations before long.

"HOUSEHOLD TASTE."*

I TRUST that I need make no apology to an educational society for my choice of the subject on which I shall have the privilege of addressing some remarks to you this evening. Few will, I think, be disposed to question the right of "taste" to be regarded as a result of education or training, though it is undoubtedly often,—far too often,—a result entirely unforeseen and accidental; indeed, it is for the most part a result entirely unprovided for.

But, though this be the case, and though to impart this somewhat indefinable quality forms no part of the avowed intention of any educational curriculum, if it be a result of training it should excite the interest of those who have made a study of educational work.

I have said in passing that "taste" is difficult to define. The difficulty is not lessened by the word being made to cover so large a field,—not only all the arts, but even social demeanour; still, some definitions will cover even its widest range. We may fairly say that "good taste" is the sympathetic perception of fitness and proportion. It is, in fact (whether applied to art or manners), "the refinement of good sense."

It is better thus to start with a clear understanding of what we mean, lest we get lost among many spurious claimants to the title. "Tastes" are ever changing; fashion is mistaken for taste; and "public taste," as it is called (that "mongrel product"), is ever ready to warp our judgment.

It will be my object to consider a single branch of the subject; but this I desire to do, not by extolling one only period of art, one only scale of colour, or one only "prophet" of either, but by putting before you some suggestions which I shall ask you to subject to a few careful tests: the test of good sense, and of such laws as have stood hand-in-hand with the best art of all periods.

By "Household Taste" I mean all that expression of artistic preference which is exhibited in the adornment of the home, and I shall endeavour to devote the greater share of attention to homes of that class with which the majority of my audience are, perhaps, like myself, most familiar,—the homes of the great "middle classes," among which are probably to be found both the best and the worst examples of taste. It is natural that it should be so; for, whereas a very moderate income will allow of many evidences of cultivated taste, no amount of rapidly-made fortune will supply its owner with that subtle talent which, if it is to be acquired in its best form, must have the groundwork laid in youth. Good taste may be, indeed must be, cultivated, improved, widened, chastened throughout life; but its germs will ever lie in early association, and its first growth can only be developed by influences which are powerful almost in proportion as they are imperceptible. If you look around you, and examine the various homes with which you are acquainted, you will not fail to perceive a very great variety, not only in the degree of attempt at artistic expression, but in the kind of preference exhibited. These will bear no sort of proportion to the wealth of the occupants. In some homes, with very modest means, there is an evident expression of a desire to satisfy some craving of the eye for form or colour. In a few cases this attempt is sufficiently successful to awaken a sense of gratification, sometimes imperfect, but occasionally thorough. In the latter case, this sense of pleasure is renewed with each visit, and may be said to assist in permanently raising our opinion of the owner. In other homes, again, a similar attempt is obvious, but excites immediately our critical faculties,—not our spontaneous goodwill, nor any sense of contentment. In such instances we become more critical the more often we enter the house; and, whilst allowing that there is much to admire, we invariably fail to like it as a whole, and cannot avoid searching for defects. If we are not very good-natured, our verdict on the occupants is perhaps that they seek credit for more taste than they possess, the fact probably being that instead of following any consistent aim, they have copied more or less imperfectly results intended for the expression of an entirely different intention. We may be pretty sure in this case that our hosts have no very genuine taste, unless it be the taste for such mild flattery as is conveyed by those expressions of surprise to which their guests politely give the sound of praise.

I pass by the merely "showy" rooms which are supposed to be "handsome," or "cheerful," or "splendid," according to the extent of gilding and mirrors which cover their surfaces. No one is now expected to think of them in connexion with taste; and even their owners (to do them justice) would hardly expect a compliment on this score.

But then comes a class of home which is, perhaps, still,—as it certainly was but a few years back,—by far the most numerous among professional and middle class people. In these houses no one appeared to feel the smallest desire that either the rooms themselves or anything in them should be beautiful; at any rate, the desire was not indulged. The rooms might be "cheerful" or dismal, fresh or dirty (in London they were ordinarily dirty), and when they underwent any renovation it was simply with a view to cleanliness. The rooms were spoken of as "cheerful," in proportion as the wall-papers approximated to white. You might sometimes find objects of interest on the walls or about the room,—mementos of travel, or curios, or even pictures; but these conveyed a depressing sense that they were there to fill up blank spaces, or to record a detail of family history, or to encourage respect for the family ancestors. That there were any of them there to give pleasure by their beauty would certainly never occur to the visitor, and had probably never entered the mind of their owner.

Now such interiors must be famil ar to every one of you. In fact, the chances are that this would not be a very unfair description of the homes in which some of you first began to form impressions of your own. What an incubus of dreariness and ugliness to shake off! How utterly unschooled,—nay, how warped,—must all our youthful instincts for beauty become. I declare that when I reflect upon what were, in all likelihood, the early surroundings of many of the curiously grotesque young women one meets in society or in public, I am not surprised at their intensity of demeanour, nor the quality of the colours they affect. They seem to me like nothing so much as those aboriginal inhabitants of newly-discovered countries, who, having for centuries quietly eaten each other without the accompaniment of "fire-water," take to whiskey with such terrible avidity, that they rapidly create vacancies for the civilised white who sells the whiskey. The fact is, they have discovered the appetite too late to learn moderation in its indulgence. After all, "moderation" is a very essential characteristic of good taste. Lord Ellenborough, in his memoirs, mentions a conversation between the Duke of Wellington and Talleyrand in reference to "popularity." The Duke said that "those who loved it never loved it with moderation"; to which Talleyrand replied, "Il n'y a jamais de modération où il n'y a pas de goût, et il n'y a pas de goût dans l'amour de la popularité." Was not this man of the world, with his shrewd wit, and keen sense, doubly right? The lack of moderation is the explanation of half the bad taste we see; and a desire of "popularity" is at the root of much of the rest. "Taste" with many people means "being in the fashion," and being in the fashion means (more often than

* By Mr. John D. Crace. Read before the Ascham Society on the 22nd of February, 1882.

not) doing as they do who are a little better off than ourselves. The natural consequence of this is failure; but the worst of it is that, while the failure is more or less evident to our neighbours, we ourselves remain in blissful contentment, missing the valuable, if bitter, lessons which conscious failure teaches. How often has the advice to moderation been crystallised into proverbs. Wherever art is concerned they should be written over the doors:—

"*Ne quid nimis*,"—Not too much of anything.

"Μέτρον ἄριστον,"—Moderation is best.

"Μηδὲν ἄγαν,"—Not even *one* too much.

Yes, that is the golden rule, not even *one* too much, and so often as it is forgotten or broken, you may have talent, art, imagination, power, but "*good taste*" you will *not* have.

But, say you, having heard so far what leads towards the expression of *bad* taste, let us hear now what you have to say about the acquisition of good taste, or its expression. Well, I would repeat what I have said,—that its first germs are laid subtly in youth, either by our visible surroundings, or by the discriminating preferences of those by whom we are trained. For let me here point out that it is not so much the being surrounded by what is ugly or sordid, as being brought up to regard the ugly and sordid with indifference,—to become *hardened* to them, which is really injurious. The child who hears and sees selection made between what is refined or true, and what is coarse or false, has already some foundation laid for the cultivation of true taste; and I would go even further, and say "better discussion and selection, even when the selection be sometimes wrong, than that all be unobserved, accepted, indifferent"; for, though the child learn not to think the best, he at least learns that to think, and make selection, are functions he may exercise, and under future favourable conditions he may come to exercise them aright. But the mental callousness which comes of want of observation and habitual indifference to beauty, or its reverse, is a disqualification to which there is no cure in after-life.

Let me not, however, be misunderstood. I am not advocating the frequent discussion (for the benefit of the young) of wall-papers, art furniture (as it is called), blue china, and the like. That is far more likely to weary than to interest children (and perhaps herein many of us will confess to some remnant of childhood). What I *do* mean is, that we, the generation who have children to train and influence, should not let ourselves fall into indifference, or apparent indifference, to such objects of art or nature as may worthily excite admiration; and we should try to make our own taste catholic, our sympathies with what is beautiful wide and unprejudiced, nor should we hesitate to express them. So, also, where we see things mean, or false, or ugly, let us sometimes say so, taking care to have a better reason to give than that they belong to some style other than that one on which alone we have chosen to set our affections,—perhaps I ought to say our "temporary" affections; for, though not very old, I have lived to see the high priests of Gothic bow down and worship before the most debased period of Classic art.

We most of us know the air of sad superiority with which some folk regard the luckless person who can admire the works of any artist who has not received the tacit and melancholy diploma of merit conferred by the suffrages of their own set. It matters not that Titian, or Raffaelle, or other great masters painted human beings as beautiful, as healthy, as full of life as they could find them; that the still greater Greeks portrayed the human form with all the roundness and grace of limb that subtlest art can define. These moderns know better than that. Pallor and the cramp are the correct thing; and if you do not agree with them, they do not argue with, they languidly pity you. Well, at least save the young from these people, with their prejudices, their sickly sentiment, and their elegantly nasty verses.

After all, there is no taste so hearty, so pure, and so lasting, as the love of nature and all that can be tested by nature, by which I mean *not* that which is mechanically or merely realistically reproduced from nature, but that which betrays a fine perception of the most beautiful characteristics of the natural object. Here is safe ground to begin upon indeed; what matters style or fashion when we are face to face with nature? She defies the copyist, and laughs at criticism, and so far as habits of observation are founded on her beauties, they must be good and wholesome.

Still, mere contact with nature will not form taste, though the habit of observing nature is a great aid thereto, and this, if habits of observation are to be acquired at all, is the one most easily encouraged in youth. Without the power of ready observation no one can acquire a cultivated taste, since that must needs be the result of mental comparison between objects observed. Imperfect or slovenly observation is precisely what leads people into those inconsistencies and anachronisms which offend the more correctly cultivated judgment. It is to slovenly observation that we may attribute those innumerable grotesque travesties of well-designed originals that one sees daily in the household objects, in the furniture and in the dress of hundreds of well-meaning people.

These are the people who, having visited some pretty country vicarage, and been charmed with the paper that adorned the walls of some cosy room 9 ft. or 10 ft. high, insist on applying the same paper to their own town drawing-room, 13 ft. high or more; or who cannot endure life without a dado, regardless of the proportions of their own room. Proportion is about the last consideration that troubles their minds, and, if they want to decorate a room, or to buy a new dress, their first questions will always relate to whether this is the fashion, or how this suited some one else, under totally different conditions.

Coming back, then, to my theorem, that "good taste" is really "the refinement of good sense" applied to things æsthetic, it is obvious that a keen sense of "fitness" and "proportion" is the true quality to encourage, if you are to lead up to good taste. To bring this sense into well-trained use in matters wherein art plays some part, it is of course necessary to have examples to refer to and for comparison. Where these are abundantly at hand, it can only be for want of rightly-trained habits of observation if the student fails to acquire a taste more or less good—more or less, according to the nature and proclivities, or the accidental bias of the individual, for, fortunately, there is no infallible standard of taste.

But no profusion of the best examples will avail those who lack observation, or whose sense has been corrupted. Look at the modern art-history of the people whose former works have stood for centuries the models for the civilised world! To the Greco-Turk the marble columns and friezes of a matchless Greek temple are only a convenient material for burning into lime; and even the modern Italian has so imperfectly learned habits of observation, that the more delicate and subtle charms of the monuments of his own land are (more often than not) completely unrevealed to him. He is proud of his art traditions and the works of his forefathers, so profusely scattered around him; but his treatment of them shows too often how completely absent is the real knowledge of the depth and breadth of their beauty. During the last few years incalculable mischief has been done in Italy by that active determination to restore which is the dread of the really cultivated. The more well-trained and capable we may be of appreciating what is best in art, the more cautious and self-distrustful shall we be in attempting its "restoration." It is those who are but half trained,—those whose eyes miss all but the most obvious beauty, who are so confident of their ability to "restore." Experience and the habit of observation have taught the former that Time is more merciful than the hand of man.

I hold, then, that if you would bring true taste to bear in your homes, your first consideration throughout must be "fitness" and "proportion"; and that to be able to attain these, or even to aim at them with any hope of success, you must have acquired that habit of observation which is the very foundation of artistic power, whether executive or critical.

I shall, if you please, assume that your position in the undertaking is rather critical than executive,—that of having to select or modify, rather than to suggest or create,—but, this being understood, it is not necessary that I should further dwell on the distinction in what I may say about the adornment of home.

If we take the not uncommon case of people about to move into a new house, or, at any rate, into a house bare of all internal finish, we shall usually find that they are not so absolutely independent in their choice of what is to be done as one might suppose. In many cases there are some existing possessions in the form of furniture and other accessories which will have to be taken into account. Often these are retained not because they are admired, but for old association's sake, or because to part with them would involve loss. Both reasons deserve consideration, and are entitled to respect. If retained, these objects must be properly made part of the scheme, and not left to become casual excrescences. Should they be important in kind, or numerous, they may largely influence the choice of style; for it will be well to avoid absolute incongruity, though they be themselves unsatisfactory, or even ugly. As part of a whole which has been consistently thought out with them, they may, in effect, be dragged up to a higher level by association with better things, just as we find uninteresting persons who happen to associate with amusing or intelligent people reflect something of the interest attached to the latter. Certainly a good deal may be done in the direction of making common-place objects take their place in a house without giving direct offence,—though where it is question of colour the difficulty is often great, sometimes insuperable.

Accepting, then, what we may of such extraneous conditions, let us take the rooms themselves, and see what there is to guide or control us. There is, firstly, the actual proportion of the room to be considered. Is it high or low, long or wide, and do we wish to minimise or to mark this characteristic, for we can do either. Again, what is its aspect; and,—most important of all,—to what uses will it be put?

The proportions of height and width may be influenced in the decoration, firstly, by the broad sub-division, horizontal or vertical, of the wall surfaces; and here arises that momentous question, "Shall there be a dado?" In many cases this feature is a material aid to the proportions of a room, as well as being of great practical use, since the damage inflicted by the angles of chairs and tables is borne by this lower stratum of the wall instead of being shared by its whole area. I trust, however, that I shall not be thought to be flinging away recklessly any artistic reputation I may have, if I venture to assert that there are cases in which a room is better without a dado. I may, perhaps, save myself by saying that, in my judgment, these cases are decidedly in the minority. The height of the dado may be greatly varied not only according to the actual proportions of the room, but according to its character and its use,—and whatever the height, its effect will be largely influenced by the amount of contrast it exhibits to the upper wall surface. If they assimilate, not necessarily in colour but in depth of tone, the apparent height will be but little affected; whereas if one be much darker than the other the room will be distinctly lowered. The converse effect is produced where the contrasting feature is vertical, as with pilasters. But it is the *horizontal* lines by which the apparent height is most readily affected; it is, therefore, in the colour-treatment of the cornice, frieze, and dado that skill can best be turned to account.

These details are almost outside my subject, because they are technical rather than matters of mere taste. My object in alluding to them is to point out that questions which I have often had put to me, such as whether "dados are still in fashion," are rather wide of the mark.

As to the general subject or the proportion of rooms, I think some of us are apt to be unreasonable. People seem to think that every room should be made to look as high as possible. Now, I am all for having plenty of actual height for health's sake; but it cannot make much difference to one's health whether a room merely *looks* high or low. Rooms which are destined for the occasional reception of many people should not only be high, but look so, for mental impressions often affect one's sense of comfort. But there are many rooms, such as the libraries and studies in private houses, which decidedly look all the more comfortable for seeming low rather than high. A really cosy room must *seem* to be a low room. It would be difficult to trace the chain of association by which this postulate is arrived at; but it may almost be called essential to the "sentiment" of the place if it be a room of quiet retirement.

We may certainly be said to attach certain sentiments to certain rooms. One room is associated in the mind with the daily *réunion* of the family, with hospitality, and the more social moments of one's days. It is here that one localises the ideal "hearth." It is the centre of the family home, and, as such, there attaches to it a

certain sentiment of what is lasting and venerable, no less than what is warm and hospitable, which seems to call for expression. To gratify this sentiment seems to me quite reasonable; nor is it necessary in doing so to make the room a mere "imitation antiquity." There is plenty of room for individual fancy; only let the parts be consistent with each other, a sober scale of colour adopted and observed, and mere eccentricity avoided.

All "eccentricity" in matters of taste is attended with risk of failure, though it may sometimes be so clever as to succeed; but in any room where the guests remain seated in one spot for an hour or two at a time, it should be rigidly excluded.

There is room for a good deal of taste in lighting a dining-room. It needs some judgment to proportion the lighting of the walls to that of the table. When successfully done, the walls should form a good background to the guests, who in turn look their best and pleasantest, one secret of which is that the well-lighted white table-cloth, by its reflected light, smoothes away from the assembled faces many a shadowed line wrought by time or care.

The dinner-group affords me the opportunity of pointing out the advantage sometimes accruing from "concentration of effect," whether in the colouring or other ornamentation of any room. It is necessary, however, to insist that the effect must be concentrated, if at all, at some part of the room consistent with its ordinary use. In English homes of all ages the region of the hearth has been the "focus" also of ornamentation, and with excellent regard to use.

There is one quality very essential to success in matters of taste, and especially so in the decoration of the house. It is the quality of "reserve," whether in ornament or colour. Nothing is so fatal to good effect as to produce an impression that you have done all you can afford to do. If your room once becomes a silent "bit of brag," all is lost. It is quite as possible to convey this impression with a cheap paper, as with the most costly decorations, and so also is it as possible and necessary to secure a sense of reserve among the most finished splendours of the palace as in the more modest home.

It is in the drawing-room that we are, perhaps, more apt to trip in this respect. It is the room which we want to look most bright and cheerful; it must "light up" well, too, for we use it most at evening; it is, moreover, our "reception" or "company" room *par excellence*. These requirements all tempt us a little away from a certain individual domesticity which should be its best charm. Is there not the same sort of air about many a drawing-room that there is about a new company hotel,—the air of being prepared to *receive* guests rather than to make them "at home." In such rooms you do not feel that you are in the family circle. You feel that the family has been kind enough to come and receive you *outside* the circle, in a room which has been specially prepared for similar interesting ceremonies.

Now this unpleasant sensation must be regarded as one for which the ladies are entirely responsible. It is often due to the careful daily obliteration of all traces of any rational occupation. The room is, perhaps, really used daily, but under restrictions possibly unuttered, but certainly inferred. The furniture is always restored to "its proper place," no books but the "elegantly bound" are allowed to repose on the table, newspapers are swept away, the only signs of writing are an impossible inkstand and blotter placed where no one could use them. Needlework is sometimes, by artful accident, allowed astray,—it is "art-needlework," of course! And there the signs of life end, unless the piano be accidentally left open.

Now, whether the room be in daily use or not, "good taste" should alter this. It is neither refinement nor good sense to receive your visitors inside your house according to the letter, but outside *the home* according to the spirit. Who can wonder if men and women grow up with formal and awkward manners if they learn them in such rooms?

I trust you do not expect from me a sketch of a model drawing-room. No, it is far from my purpose this evening to dogmatise in these matters. I am all for freedom of choice and individual taste, so far as they are the spontaneous result of well-digested observation and reflection. But I should like to put forward a few general suggestions for your consideration.

When we make it a requirement that the drawing-room is to be bright and cheerful (and I do not expect all my friends to admit even this much), are we quite sure that we best attain this end, or rather that we combine this end with our other daily requirements, when we propose to keep everything "very light," that is to say, use mere tints of colours? I am not at all sure of it: and I am now thinking most of rooms in London. Very pale tints take ordinarily very cold shadows, and where there are cold shadows a sense of chill prevails. I am not going to scoff at "white and gold." Only give white and gold some warm colours to reflect, and it is a valuable form of decoration. But white and gold doors and woodwork, with nothing but pale tints on the walls, delight me not. No one ever extracted a sense of cheerfulness out of that combination; though, when gentlemen went to evening parties in coats of "scarlet and gold," plum-colour, or bright blue, it was, no doubt, much less chilling than now. I must repeat that white is a most valuable colour where cheerfulness is required, but its use is to set forth and give value to colour.

From an opposite point of view "black" also is most valuable; and where you have reasons for employing low tones of colour (which should often be, for they afford repose to the eye, and set forth many of our household treasures with advantage), it is in *black* that we have the means of restoring to them a certain sense of purity, without sacrificing their subdued effect. There are, again, many cases in which the room itself will really be the better for being subordinated altogether to its contents, and in these cases (which are rather the exception) somewhat low tones may be retained throughout with advantage. I say *throughout*, because I am speaking of the larger surfaces; but, where this is done, the well-trained eye will require the relief, in small quantities, of brighter contrasting colour This brighter colour may be supplied by the minor reliefs of the decoration and draperies, or even in the movable ornaments and accessories; but it must be there. This is one point in which feeble imitators of the really able professors of low tones break down. They have seen a part, but not all, of the original. Contrasts to low or "tertiary" tones may be made in two ways,—by the use of large masses of contrasting *tones*, or by small quantities of bright contrasting colour.

It would be a serious omission were I to make no allusion to those things which often materially affect the appearance of our rooms, and form our excuse for the treatment adopted,—our movable treasures. To begin with pictures, if they be of any excellence the walls in which they are to hang must be becoming to them. It is too long a subject to go into in detail, but I may make one or two brief suggestions. The first one is that there can be no greater mistake than to hang paintings on dirty light tints, which always "drag down" the tones of the pictures themselves, instead of setting them off as some suppose. (If you will observe the effect of dirty linen in juxtaposition with the human face, you will find an apposite parallel.) Another point is that the frames or mounts of the pictures must be taken into account. White mounts in gilt frames are useful where the wall is rather pale, or of mixed colouring; but should be excluded where the pictures hang on dark grounds. If the pictures are few and far apart, especially if "water-colours," they are best hung on quiet tones of not too dark colour. If numerous, the tone of the ground may be strengthened with advantage. In the latter case, and for paintings in oil, a rich red has no rival as a ground colour. A poor or dusty-looking red is not good. The proximity of black rather tends to enfeeble water-colours (which lack depth in the dark tones and shadows), but is beneficial to oil-paintings, which thereby gain in purity.

Then there is "china." In this present year of grace, a paper on "Household Taste" which made no mention of china and pottery would indeed be "the play of 'Hamlet' without the Prince of Denmark." Next to our pictures, our china is our most valued movable decoration. With its rich and pure colours, its soft whites, and its delicate glaze, it brings life, brightness, and interest into otherwise dark corners; abolishes the sense of monotony; and hints, in the brightest, prettiest way, a connexion with the past. It is one of the after-touches which conveys (when properly used) a sense of finish and a personality such as nothing else can quite make up for. But let me recall that warning motto which we wrote up over our doors, "*Ne quid nimis*,"—"Not too much of anything." Do you think it is very good taste to hang up long rows of china plates, to perch your crockery on every ledge, and still to buy more crockery for yet more shelves? I do not find it stand the test of any canon of taste that I have ever tried to apply to it. It may be a convenience, or even a necessity, for "collectors," but as decoration it does not convey to me any sense of refinement, and I am sure it is not good sense.

From China to Japan is but a step, and much of what I have said above of porcelain and pottery may be said of the charming products of Japan. What a sparkle may be given to a room by a few objects from that wonderful home of colour! What enjoyment one may find in the exquisite workmanship and skilful art of the finer works that come thence!

But how easy it is to descend from admiration to mere craze! Rows of fans are as trying to one's sense of fitness as rows of plates; and, after all, it seems hardly reasonable that a drawing-room should resemble a shop.

Then there is the "needlework,"—yes, "art-needlework." Let us begin by begging for moderation in sun-flowers. This splendid flower has become a sort of badge of the age. All that the rose was to the Tudors, that the Union Jack is to the Briton at large, this, and more, the sun-flower is to (pardon me the epithet) the "Art Jingo." How clearly it announces the leading idea of the artist. No superscription could say so legibly, "I am '*of them*.'" Therefore, I have only one word of caution to put forward. It is to ask, "need this be said so often?" Again our motto, "Μέτρον ἄριστον,"—"Moderation is best." In sober earnest, I would make but one or two suggestions as to the needlework undertaken for home adornment. Do not waste time in hackneyed patterns or ideas; let your work show some thought, and, if possible, some originality; but let not this last be obtrusive. A lady's needlework, like her manners, will please most when unaffected.

I have reserved yet one subject to the last. What is it that gives the last and finishing touch to home, that touch which so indefinably makes or mars the sense of refinement in the whole? It is the lady's hand. Its influence is always perceptible in innumerable small details, each in itself too minute to define, but together producing an effect more keenly felt than all the mere "art." It can add refinement to the beautiful,—can make us forget the ugly, while for its absence nothing can quite compensate.

But in nothing can the lady's hand tell with more marked effect than in the arrangement of her flowers. No room is quite perfect without flowers, and they are more or less valuable as they are turned to best account. Even the very few that we poor Londoners can ordinarily obtain afford room for skill. Half their beauty may be thrown away if they are not grouped so as to aid each other. I will venture to offer one hint on this point. In arranging a group of flowers, consider not only the harmony or contrast of one with another, but which flowers you mean to be in full light, and which in shade, and group them so as to allow of some "concentration of effect." So also in placing your vase of flowers, select a light not too diffused, in which one part of the group shall be best lighted, and let that part stand where its background is in shadow. Attention to such points soon becomes habit, and the decorative value of your flowers is increased to a surprising degree.

Here I must close, leaving you to take up the thread of my subject, and perhaps to weave it into some useful web. Let me sum up briefly. The watchwords I have suggested are "Fitness," "Proportion," "Moderation." I ask for the inculcation of habits of observation and comparison, the encouragement of healthy and wide sympathies. Taste, if kept reasonably free of prejudice, may be improved throughout life, but the seed must be laid in youth. We, each of us, are responsible to the youth over whom we exercise daily influence and in whom we can awaken some sense of good and evil in art, as in morals. We can, almost without effort, give youth one more interest in the works of nature and of man. The door thrown open in youth leaves free whole provinces of innocent delight. Left closed, the lock is soon rusted, the key will turn no more.

Stoke Newington.—Plans for an infants' school in connexion with the Church of St. Matthias, have been prepared by Mr. Butterfield.

ART-TEACHING AND ITS INFLUENCE ON DECORATIVE DESIGN.

WEST LONDON SCHOOL OF ART.

MR. GEORGE AUGUSTUS SALA presided on Saturday evening last at the annual distribution of prizes to the successful students of this flourishing school, at the school buildings, Great Titchfield-street. The large room was crowded to its utmost capacity.

Mr. J. S. Rawle, F.S.A., the head-master, read his report to the Committee for the year 1881. It contained the following passages:—

In submitting to you my report for the year ending 30th of September, 1881, it gives me great pleasure to state that the West London School of Art did, in that year, win for itself a higher position than it had ever attained before.

Five hundred and fifty-seven students attended the school, being thirteen fewer than in the previous year. The day classes were attended by 154 students, and the evening classes by 403.

The school fees, in this period, show the greatest amount ever received, namely, 826*l.* 8s. 7d., giving an increase of 68*l.* 5s. 2d. on the previous twelve months.

The Government payments on results are the highest yet obtained by our school, namely, 440*l.* 13s. 4d., which shows an increase of 93*l.* 10s. 1d. on the Government grant for 1880. These payments on results afford the highest possible testimony as to the industry of our students, who last year submitted their greatest number of works for examination at South Kensington, namely, 3,888, an excess of 1,311 on the number submitted in 1880.

The most advanced works from all the schools of art in the kingdom were selected by the examiners for the annual "National Art Competition," in which the West London School distinguished itself by gaining the highest number of awards, namely, four silver medals, five bronze medals, and six Queen's prizes,—total fifteen awards, or eleven more than in 1880. The fifteen awards were gained for studies from the life and the antique, ornamental and architectural design, and still-life painting.

It may, perhaps, prove of interest to you if I give a few particulars as to the position taken by our school, when compared with the twelve Metropolitan Schools of Art, omitting the National Art Training School at South Kensington, which is exceptional in its constitution.

The West London School gave instruction to 23½ per cent. of the entire number of students under tuition in London.

We gained 25 per cent. of the "National Competion Medals and Queen's Prizes." In the "Third-Grade Advanced Examinations," we obtained 35½ per cent. of the entire number of successes; also, 27 per cent. of the Third-Grade Prizes, and 15 per cent. of the Second-Grade awards.

A former student of this school, Mr. Oscar Junck, has recently gained the Gold Medal for Sculpture, and the Travelling Studentship, value 200*l.*, at the School of the Royal Academy.

In the annual competition of the United Schools Sketching Club, in which five of the largest Schools of Art in London compete together, Mr. Edmund Caldwell, of our school, obtained the prize for the "Animal Subject."

Mr. Walter Graham, treasurer, made a few remarks as to the financial position of the school, with special reference to a debt of 1,350*l.*, which, he said, it was very desirable to clear off. When this was done the school would be self-supporting. He appealed to all who could do anything in the matter to aid the committee in clearing off this debt.*

Mr. J. D. Crace, honorary secretary, announced that the Mence-Smith Travelling Studentship † had been awarded to Mr. Henry Pegram, who, although the only candidate, had submitted work of great merit, fully showing himself worthy of the studentship.

Mr. Sala then addressed the meeting. He said:—Ladies and gentlemen, students of the West London School of Art,—The lucid and exhaustive statements made to you by your head-master and by your honorary secretary happily absolve me from the necessity of entering into a number of facts and details only recently acquired and imperfectly mastered by me, and I can thus at once address myself to the matters on which I am desirous of speaking to you. But I may first, perhaps, be permitted to say that during a long and busy career, I have made it a rule,—a rule from which I think I have scarcely ever departed,—never to address a public audience without I had something to say, and unless I had some practical knowledge of the subject on which I proposed to speak, so that I might, however humbly, serve some useful end; for I look upon words as being very valuable things, which should not be wasted. It happens that during more than a quarter of a century I have been closely and intimately connected, and deeply interested,—and that not only from sympathy, but from the fact of one of my professional avocations being that of an art-critic,—in all that concerns art, which was the object of my passionate boyish love, and which now, in the autumn of my life, is my stay and my solace. That which I have to say to you refers mainly to the progress in the decorative arts which has been made within the last three decades. I do not know whether there are any here who remember to have seen, thirty years ago, an exhibition in Pall-mall, hard by St. James's Palace, in the magnificent mansion once the town residence of John Churchill, Duke of Marlborough, and now the town residence of his Royal Highness the Prince of Wales. The exhibition was a Museum of Horrors. The house was the property of the State, and in it the Government had temporarily housed in the year 1852 a number of objects, collected, I believe, by the then Department of Practical Art. The vast entrance-hall and the noble saloons of the old Queen Anne mansion were full of the ugliest things in the way of pseudo-artistic decoration that Mr. (now Sir Henry) Cole could gather together as examples of what to avoid. Horrible carpets, hideous tapestry, wall-papers shocking by their ugliness, revolting stained glass, and wretched iron work,—all embodying bad form or bad colour, and very often both,—were here to be seen. The Great Exhibition of 1851 was then nearly two years old, and the Department of Practical Art has since become the great art-teaching university of South Kensington. I wish always to remember these beginnings. But, in order to demonstrate that the aim of the then newly-established Schools of Design was to abolish "houses full of horrors," and to substitute in their stead houses which should be full of works of beauty and taste, there was really not much need to assemble so many ugly things within the walls of one house. One had only to walk about the streets and look in the shop-windows, or merely to glance at the furniture and fittings of one's own house, to be made aware that the age was essentially one of ugliness. We had been surrounded by ugliness everywhere since the beginning of the century. The rupture of the Peace of Amiens shut us out from the Continent and left us to our own artistic devices,—and miserable devices they were. I will not dwell on the period of the Regency; for, although I shall ever be horror-stricken at the monstrosity of the Pavilion at Brighton, and although I am aware that Nash and his followers were, from a certain point of view, very indifferent architects, I cannot forget that the Regency gave us those noble and spacious thoroughfares, Regent-street and Waterloo-place, in lieu of the slums of Great Swallow-street. Neither can I forget that the Regency converted old Marylebone Fields into one of the most beautiful pleasances in Europe, Regent's Park. Our furniture up to the period of the Great Exhibition of 1851 was either meagre or clumsy, either shabby or garish. Great as was the renown of Rundell and Bridge as silversmiths,—you will remember the Shield of Achilles designed for them by John Flaxman,—the manufacturers of plate mainly excelled in the production of tasteless dish-covers and bad soup-tureens. The race-cups, candelabra, and presentation plate executed before the time of the World's Fair were almost entirely devoid of artistic value. Nor were our carpets, our curtains, our glass, our pottery, our paperhangings, on a par with, or even within a very long distance of, similar articles produced by Continental workmen. Such was the state of things when the wise and good Prince Consort, assisted by Henry Cole (whose name should always be mentioned with honour for what he has done in this connexion) and other gentlemen, took the interest of art in hand, and determined to put down ugliness as if it were Satan. But, first, the Schools of Design, few and feeble as they were at the outset, and next, the Great Exhibition of 1851, gave an impetus to arts which had long been neglected, and, besides showing us what the foreigner had done, showed us how we might at first imitate the foreigner, soon equal him, and eventually surpass him. I am much struck by the admirable works of art produced by the students of this school, which I see on the walls of this room. Why, thirty years ago such works would no more have been seen in this neighbourhood than the Colossus of Rhodes or the "Moses" of Michelangelo. Although you are afflicted here with a heavy debt,—a debt which I will well bear in mind,—you yet enjoy the proud distinction of being second to none of the branch schools of art. Although International Exhibitions since 1851 have had a tendency, in some directions, to develop rather the commercial than the artistic spirit of the age,—some of the later displays of the kind being marked rather too strongly by such things as trophies of pickles, triumphal arches of chocolate, and bowers of candles,—still, the benefit conferred on the industrial and decorative arts by the congresses in question is too great and palpable to be denied or ignored. But, on the other hand, the Schools of Design,—or, as they have lately been called, Schools of Art,—devoid, as they have been, of any showy or sensational attributes, have been steadily and unostentatiously pursuing their beneficent course, instructing, refining, elevating, the studious youth of the country. The age of ugliness has gone, let us hope never to return. The spread of art-education during the past thirty years is due in great part to five distinct boons. The first was the purchase by the Government, early in the century, of the Elgin marbles. The influence of these magnificent specimens of art was not at first very manifest except in regard to sculpture, and did not permeate into the decorative walks of art until much later. But the Elgin marbles are now recognised as invaluable art educators, not only by those who pursue in its highest phases the plastic craft, but by those who devote themselves to decorative work. The next boon was the Great Exhibition of 1851, and the series of recurring exhibitions. Not that all the exhibitions subsequent to that of 1851 were entirely successful from an art point of view, for albeit art and industry were well represented in them, and albeit they included picture and sculpture galleries, the commercial element in them was somewhat too pronounced. For the third boon you have, very curiously, to thank two very different and conflicting things. You have to thank the fire which destroyed the Houses of Parliament, and you have to thank that remarkable religious revival, at first called Puseyism, and latterly Ritualism, which followed the publication of "Tracts for the Times." The burning of the Houses of Parliament led to a long controversy as to the style to be adopted for the new building. The Royal Commissioners at length adopted the Gothic style, and appointed Mr. (afterwards Sir Charles) Barry, who had previously gathered bright laurels as a Renaissance architect, — witness the Reform Club, in Pall-mall,—to be the architect of the buildings. With true modesty he called to his assistance a wonderful Gothic draughtsman and designer in the person of Augustus Welby Pugin, who has, perhaps, never been surpassed in his knowledge of Gothic decoration. To the building of the New Palace at Westminster we certainly owe the wonderful improvement which has taken place of late years in the art and manufacture of encaustic tiles, stained glass, metal work, and carving in wood and stone. Improvement in all these things and more is also, as I need hardly say, largely due to the religious revival of which I have spoken. Of its theology I have nothing to say. Among the other arts which it re-discovered and revived, mainly owing to the efforts of the late Sir Digby Wyatt, is the art of pictorial illumination. The fourth boon for which you have to be grateful is Japan. Now Japan was hardly heard of, and very little was known of it, in 1852. True, there was China, from whom we borrowed the willow-pattern plate and a great deal else which was not worth borrowing. From Japan, as soon as the country was opened to us, we learned a thousand beauties in design, in composition, and in colour,—beauties which now permeate the whole republic of art. Although I am not a crazy worshipper of "blue and white," and although I do not become hysterical over an "eight-mark" teapot, I cheerfully recognise the vast benefits which our artists have received from the study of Japanese art, characterised as it is by a

* A printed statement distributed at the meeting says that the one difficulty of the school is now, and has always been, financial. "This difficulty largely increased with the occupation and fitting up of more extensive premises and the greater outlay demanded by increased efficiency. Like all similar schools of art, its existence depends on its receipts being largely supplemented by subscriptions and other external aid. A debt of over 400*l.* already hung over the school when it was decided to remove to more suitable premises. That debt is now increased to about 1,350*l.*, and the existence of the school depends upon that sum being raised within a limited time. His Grace the Duke of Westminster has contributed the sum of 100*l.* to that end."

† Founded to enable students of decorative art to travel in Italy. (See *Builder*, vol. xl., pp. 82, 227.)

tenderness of feeling and brilliance of colour which are peculiarly its own. The fifth boon is one, perhaps, as to the advantage of which some of you may have your doubts. I mean photography, which was in its infancy in 1852, and which can scarcely be said to have come to maturity yet. Of course, there is photography *and* photography. Although it was at first scouted by high and mighty artists, and although the sun does err sometimes, photography has done one truly valuable service for you and for all students of art. It has enabled you to contemplate exact representations of the great works of the ancient architect and of the Mediæval architect. You can learn from a photograph that which line engraving or wood engraving would never have told you. You can see the very texture of a building or other work from a good photograph of it, and hence the great value of photography to the students of art. Before the days of travelling studentships, and before photography was known, it was impossible for the great mass of students to judge of the exact aspect of the many marvels of art to be seen on the Continent. We have but to look around us in the present day to behold with wonder, as we should behold with gratitude, the results of the five boons to which I have called attention. We have but to look to the decoration of our houses and to the multitude of charming objects displayed in our art galleries, and in our shop windows, to know that art is progressing in every direction. It is clear that the immense art production which is going on on all sides around us cannot be accomplished without an amazing amount of hard work. And if I have any practical object in addressing you this evening it is,—rejoicing, nay, exulting, as I do, in the fact that the majority of you are young people,—to impress on you the necessity, the indispensable necessity, of hard work. I see on the walls the evidence of the long hours you have spent carefully, sincerely, and honestly in the pursuit of your studies. Many of you have other vocations, but you have worked here at your studies and have succeeded in producing the works which so well reward you. I implore you to persevere in your work, sedulously pursuing your studies in art. Doctors at the present day are very fond of telling us that we all work too hard, and we hear a great deal about "undue pressure on the brain," "destruction of tissue," and so on. So far as work is concerned, I have always let the doctors "go hang,"—not that I wish to fly in the face of the doctors, nor am I senseless enough to advise you to work till your eyes are dim, till your brain is dizzy, or till your wrist is so stiff that the pencil almost falls from between your half-paralysed fingers. I wish you to measure your own capacity, and to be guided by your own common sense, but, at the same time, to work as hard as ever you can. If you are young and healthy, and strong, and have good eyesight, and with these a strong will, then work early and late, work with all your heart, with all your soul, and with all your strength. When you awake in the morning, think that you see Time as a thief trying to steal your clothes. Jump out of bed, seize the robber by the throat, and go to work. Do not be too apt to think that all that the doctors say in deprecation of overwork is applicable to yourselves. We all know the story of the currier. Although it has been told in a hundred different ways, perhaps the manner in which I am about to relate it may not be familiar to you. The elders of an ancient city, menaced with invasion by a neighbouring power, were gathered together in council to consider what means they should adopt to repel the enemy, and of what materials they should build their fortifications. The mason and the bricklayer, of course, recommended stone and brick, while the carpenter was equally decided in favour of timber. A currier was consulted in due turn, and he replied, "There is nothing like leather!" In like manner I say, following the currier, "There is nothing like learning." Go on learning, learning, learning, and you will eventually excel. But to what end all this labour? Why this persistence, this determination to excel? That you may be president of the Royal Academy? That you may ride in a golden coach? That you may be bidden to great men's feasts? That you may have a grand house built, that you may furnish it more grandly, and entertain grander company in it? That, in short, you may acquire fame and fortune? Alas! the race is not to the swift, nor the battle to the strong, and fame and fortune rarely come together, even to the most deserving, and often do not come at all. No; I would have you excel first, in order that you may have the means of earning an honest livelihood. None of us are so highly placed, none so rich in the riches of this world, but that we may be beggars to-morrow. There is no more deplorable spectacle than that of a formerly rich young man reduced to poverty, and unable to do anything to earn his bread. Therefore, each of you do your best to acquire some practical craft which shall be to you in the time of need a protection and a shield. The next reason why I would urge you to excel in your work is that you may become good citizens, and that by the honest, earnest, and industrious pursuit of your craft you may be able to do some service to the State, for I maintain that the man who produces a beautiful thing or does good honest work directly contributes to the intellectual and material wealth of the community. Lastly, I would entreat you all to do your best to excel, for the sake of being happy, for the pursuit of happiness is one of the rights of man. It is so claimed in one of the noblest pieces of English composition ever penned,—the American Declaration of Independence; and one of the wisest and gentlest of English divines, Jeremy Taylor, the warbler of poetic prose, has told us that we have so infinitely kind a Father that we cannot please Him unless by being infinitely pleased ourselves. We have been divinely and mercifully told that in our Father's house are many mansions; but we may, as mercifully, be suffered to think that these mansions are not only in what we figuratively term "Heaven," but that they are in all His earth and in all His works,—in the whole universe as well as on this earth,—and that these mansions may be found in the tiniest and humblest of things: in the cell of the beehive, in the cup of the convolvulus, in the down of a linnet's wing, and even in the golden sheen on the back of a beetle. My race is nearly run, and I may not live to see another mansion which I see plainly and distinctly with the eyes of a hoping mind. I see it rising far above the foundations; I see the scaffolding; I hear the masons and builders at their work; I see the real House Beautiful, into which no mean or vulgar or shameful thing will be permitted to enter,—the Palace of Art,—art which shall refine, elevate, and ennoble the people. I see the Palace, which, in its every beam and rafter, in its every arch and column, in its every soffit and cornice, from basement to roof, shall redound to the glory of God, the only and eternal source of all beauty and all truth and all right.

Mr. Sala then proceeded to distribute the prizes, which included the following:—

NATIONAL ART COMPETITION.

Silver Medals.

Head from the Antique,—Arthur Ellis.
Figure from the Antique,—Rowland Holyoake.
Still-Life Painting in Oil,—Samuel F. May.
Figure from the Antique,—Walter H. Webb.

Bronze Medals.

Studies from the Figure,—Carl Almquist.
Architectural Design,—Frank Chester.
Design for a Wall Paper,—Walter Chrippes.
Figure from the Antique,—Arthur Ellis.
Design for a Frieze, in Colour,—Edward Hammond.

Queen's Prizes.

Painting from the Figure,—Carl Almquist.
Design for a Wall Paper,—Arthur Candler.
Still-Life Painting in Oil,—Margaret K. Howse.
Figure from the Antique,—Fredk. H. A Parker.
Painting from the Figure,—Henry A. Pegram.
Design for a Frieze, in Colour,—Henry E. Tidmarsh.

LOCAL PRIZES.

For the Best Designs, in Colour, for a Frieze.—First prize, Edward Hammond, 5*l.* 5*s.*; second prize, Henry E. Tidmarsh, 3*l.* 3*s.*

For a Design for a Chimney Piece.—Henry R. Paul, 2*l.* 2*s.*

For the Best Designs for a Wall Paper.—First prize, Walter Chrippes, 3*l.* 3*s.*; second prize, Arthur Candler, 2*l.* 2*s.*

For the Best Study from an Antique Statue.—Arthur Ellis, 3*l.* 3*s.*

For the Best Sheet of Historic Styles of Ornament.—F. Montgomery Norton, 2*l.* 2*s.*

For the Best Model in Clay for a Frieze Ornament.—Jenkin Jenkin, 3*l.* 3*s.*

Mr. J. H. Donaldson moved, and Mr. J. D. Crace seconded, a vote of thanks to the headmaster and the other members of the staff. This having been carried,

Mr. Rawle replied at some length. In the course of his remarks he said it was intended in the future to give more attention in the school to the study of design than had hitherto been done, and he invited the hearty co-operation of the students with the teaching staff in that important work. Unfortunately there was too often a disinclination on the part of students to follow the study of design as a profession. They were more generally desirous of following up the work of pictorial art than of seeking to win for themselves honourable distinction as ornamentists. Another difficulty with which the teachers were beset in connexion with this matter of the teaching of design was that students too often would not pay sufficient attention to the study of the human figure. Neither did they take up so earnestly as could be desired the study of art generally, nor duly study the characteristics and principles of ornamental art,—all of them branches of knowledge very essential to the success of designers. Why this should be he could not see, for while in the pursuit of pictorial art as a profession nine out of ten and even nineteen out of twenty students would never obtain more than tenth-rate positions as painters of pictures, and would be sure to meet with all those attendant bitter experiences which told them (unfortunately too late) that they had mistaken their vocation, on the other hand, in the profession of an ornamentist or of a decorative art workman there was a wide and extending field of success and emolument,—one in which skilled thought and skilled labour were increasingly in request. He trusted that his remarks would not be regarded as intended to cast a wet blanket over the pursuits and aims of those students who were taking up pictorial art, for where true genius existed it would undoubtedly assert itself. He saw no reason why there should not be produced from the students of the school a band of ornamentists and decorative artists who should, by their work, mark a distinctive epoch in the history of the school. He would suggest that all employers in any of the branches of art-workmanship should make it a condition in their apprentices' indentures that they (the apprentices) should regularly attend some school for the study of the art of design during the time they were bound. That would be a step towards combining the art-training of the school with the technical training of the workshop. That was a common practice in France, and when he was at Nottingham he got it introduced there, where it was found to answer exceedingly well, there having been at one time as many as fifty apprentices attending the art-schools at Nottingham, their fees being paid by their employers. Upon students engaged in the study of design, he would urge the necessity of thoroughly mastering the characteristics of former styles,—in other words, to lay for themselves a foundation built upon the experience of others,—before they attempted to do anything original for themselves. In conclusion, Mr. Rawle dwelt upon the advantages offered to art-students in London by the South Kensington and British Museums,—advantages which he urged them to avail themselves of, not forgetting, at the same time, to go to the great treasure-house of Nature.

On the motion of Mr. R. W. Edis, F.S.A., a vote of thanks was given by acclamation to Mr. Sala, and the proceedings terminated.

A FREE HOSPITAL FOR RUGBY.

THERE are plenty of generous people in the world; many, indeed, who never make their generous feelings known through fear of doing harm in their efforts to do good. Mr. R. H. Wood, a respected inhabitant of Rugby and a constant attendant at the Congresses of the British Archæological Association, has just now allowed it to be known "that, in accordance with the wish of all parties, it will be a pleasure to him to carry out the intention to found a hospital for the poor of Rugby." These words imply the offer of a freehold site, a new hospital, and ample endowment to maintain the institution in proper working order. We are assured that the style and architecture of the building, its domestic arrangements, surgical appliances, medical supervision, and governance, will be on a par with the spirit that prompts the offer. We are fastidious in respect of hospital plans and hospital management, so that our praise at present refers only to the offer, but in that respect it is sincere and hearty.

The Fitz Recreation Ground, Keswick.—The Committee of the Fitz Recreation Ground announce that they have arranged for the purchase of twenty-seven acres of land for the sum of 6,800*l.*

THE NEW CHURCH OF THE ORATORY AT BROMPTON.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

On Saturday afternoon last some seventy or eighty members of the Architectural Association visited this important building, which has now made considerable progress. The visitors were received and conducted over the building by the architect, Mr. H. A. K. Gribble (with whom is associated in the work Mr. J. T. Walford).

Mr. Gribble, after the visitors had looked at the plans and drawings, explained that the nave is 51 ft. wide, and will be groined throughout in cement concrete, composed of the best Portland cement and Portland stone chippings. No slag would be used in it, nor any iron ties. Although slag is a valuable ingredient in concrete, possessing as it does valuable binding properties, it is not thought advisable to use it, seeing that the ceiling is to be very elaborately decorated, it being thought that the iron contained in the slag would be likely to give very serious trouble by injuring the decorations. The aisles are 30 ft. wide, having solid walls running up to a height of 50 ft. The number of chapels is nine or ten. On entering by the main entrance the first chapel on the left-hand side is dedicated to the Sacred Heart. The one opposite to it on the right-hand side is the Chapel of St. Patrick. Beyond this, on the same side, is the Magdalen Chapel, the altar of which is to cost 1,100*l.*, and is already in the hands of the sculptor. Opposite to this chapel is the Chapel of St. Joseph, which has a small apse, and is surmounted by a cupola. This will be the most perfectly-lighted chapel of the whole series, because it has window lights on each side, in addition to the cupola above. Next to the Chapel of St. Joseph is the Chapel of the Seven Dolours, which has two small quadrants at the end. The space behind one of these is utilised as a lobby, and that behind the other one is used for hydrants, hose, buckets, and other appliances for guarding against damage by fire. The altar for this chapel, which will be placed in a recess between the two quadrant corners, is also in the hands of the sculptor, and is to be given by the Duchess of Norfolk. On the opposite side of the nave what would otherwise be wholly used as a chapel is set apart for the organ, which will be placed in a gallery, beneath which will be a Calvary chapel. The space for the organ, although not quite so lofty as Mr. Gribble could wish, will have three large openings into the church, one into the north transept (which will be the Lady Chapel), one into the nave, and the third into the Magdalen Chapel, already mentioned. The gallery supporting the organ is constructed of rolled-iron joists supported on cast-iron stanchions. The walls of the organ-chamber will be lined with American walnut. Mr. Gribble had at one time intended to use stone, but he feared that the effects of the reverberation would be disagreeable, so he had changed his intention. The organ-gallery is kept at a higher level above the floor than would otherwise be necessary in order to allow of sufficient headway in the aisle beneath it for processional banners, &c. The south transept will be dedicated to St. Philip Neri, the patron saint of the Oratorians. The altar will be in foreign marbles, and is estimated to cost five thousand guineas, exclusive of two of the marble figures. The north transept will be the Lady Chapel, and the altar for it is in course of restoration by Mr. Ruddock. It is a very fine specimen of inlaid Florentine marble work,—perhaps, said Mr. Gribble, somewhat debased in style, its date being 1693. It comprises several marble figures of heroic size, stands 40 ft. high, and was purchased by one of the fathers of the Oratory from a church in Brescia, which was about to be pulled down. Entered from the Lady Chapel is the Chapel of St. Wilfrid. The sanctuary or chancel measures about 75 ft. in length by 50 ft. in width,—1 ft. less in width than the nave—and it has a height of 82 ft. to the ceiling. The semi-dome over the apse has already been commenced, the two lower rows of coffers being executed in brickwork, while the upper part will be in concrete. The great dome, which will cover the intersection of the nave, transepts, and sanctuary, will be entirely in concrete. The piers supporting the arches of the nave are each faced with grouped pilasters of beautiful marble from the Radford quarries, near Plymouth. There will be several sacristies. The principal one is approached from the sanctuary and from the south transept, and in it will be kept the costly vestments of the priests, and special precautions have been taken to secure dryness. The walls will be panelled for a height of about 10 ft. in walnut inlaid with boxwood, and in front of this panelling a series of presses will be ranged round the room. The upper parts of the walls of this apartment contain a series of lunettes which it is proposed to fill in with figure-subjects illustrative of the history of the church. This sacristy has a small apse, in which will be placed a marble altar.

We may on a future occasion give some further particulars of the building.

CONCRETE SEWERS ABROAD.

The construction of concrete drains is increasing yearly on the Continent, notwithstanding the competition of earthenware pipes. These drains are made in two ways. Either concrete pipes or drain-pieces are joined by concrete-mortar, or the mould of the drain is put up on the spot, and concrete rammed round it into the soil. Although the latter mode of proceeding is the cheapest, and possesses besides the advantage of homogeneousness and better conditions of drying, the erection of the mould, and especially obtaining an accurate angle of fall at small gradients, offers no slight difficulty. After removing the mould or centreing, moreover, the inside requires attention, if the whole is to be finished off carefully.

These difficulties have induced Herr J. Chailly, of Vienna, manufacturer of concrete goods, who distinguished himself as a member of the Austrian committee appointed to fix a concrete standard, to construct centreing for concrete sewers by means of which the desired form of section, and the inner surface of the drain, may be made so exactly and smoothly as to dispense with subsequent finishing off. The saving thus effected is said to be the least advantage, the principal one being that the sewer may be constructed with a degree of almost mathematical exactness, which insures a rapid draining off of fluids and prevents accumulation injurious to health. The apparatus recommends itself also on account of its cheapness, a length of only 6 ft. being required; as soon as that length of drain is completed, the apparatus is withdrawn, and a fresh piece begun. The time taken in completing a length is three hours, so that in a working day of twelve hours about 25 ft. may be made. The concrete being rammed into the soil, and thus becoming closely connected with it, settlements and cracks are out of the question. It is claimed for the apparatus that, the mould being firmly fixed, it does not move even during the operation of ramming the concrete, while with other systems it is shaken about, and it is impossible to maintain the same direction and an exact level. After the piece of drain is finished, the apparatus may be loosened easily and without friction, and moved forward. A number of concrete sewers have been made with Chailly's apparatus; for, instance, 20,000 ft. run at Linz, as well as many drains at Vienna, Teschen, &c.

The construction of the apparatus is as follows:—It consists of a tube, the outer surface of which forms the inner surface of the drain. This tube is divided longitudinally into six or more parts or planks, the lateral divisions being of the same width throughout; the lower or bottom plank and the upper or vaulting piece only being wedge-shaped. The upper wedge must be, on the whole, narrower than the semicircle of the vault, so as to enable the workman to detach it at the proper time from the concrete without pressure or loss of time. All the planks have smooth horizontal joints, and the tube formed of them is somewhat rounded off inwards, or drawn together at its front and back ends, so that its cross-sections at those places are somewhat smaller. This facilitates the insertion of the tube in front in a gauge-ring of the drain-mould, and behind in the completed piece of the drain; at the same time it adapts the tube for making slightly-bent drains. The lateral planks are jointed to the gauge-ring by means of conic tenons in projections of the same; the bottom plank is secured to the gauge-ring by two wedges. This gauge-ring cuts off the concrete to be brought in in such a manner that each new piece of drain is rabbeted to the piece last made.

The gauge-ring is adjusted by wedges, and at top and bottom by squares and plummets provided with exact marks. As the gauge-ring must always be at a right angle to the axis of the drain, it will, owing to the fact that sewers have more or less of a fall, and are, as a rule, constructed from below towards the top, be not vertical, but hang over at the top. In accordance with this, a mark corresponding to the inclination is placed upon the lower square, and the plummet set upon it. The upper square is put upon the correct longitudinal direction of the drain by means of sighting rods. The withdrawal of the apparatus after fixing the gauge-ring is effected by first loosening the bottom plank and withdrawing it, and next securing it to the gauge-ring by means of the wedges mentioned, while, at the back, it is supported at the lateral planks still in the drain also by wedges. The lateral pieces are kept in their place by suitable wedge stays. As soon as the bottom plank is fixed the concrete is stamped in between the soil and bottom plank by means of curved pestles, and levelled with radial joints. The lateral planks are then drawn forward in a similar manner, fastened, and stamped in with cement. The vaulting piece is then similarly dealt with. The vaulting slab is fixed to a carriage-like wheeled frame, which follows on withdrawal. The vaulting piece settles somewhat, but is lifted again on being fixed to the gauge-ring. Two gauge-rings are only necessary at the commencement of work. The carriage is then put inside the tube, and connected with lateral pieces, for which it has supports. These longitudinal pieces serve for fastening the wedge stays, which secure the lateral planks.

Various sections, but mostly of an egg shape, have been made with this apparatus. The sewers of Linz are constructed of concrete of a thickness of 6·2 in. at the bottom, 5·9 in. at the sides, and 5·1 in. at the crown, and they have an inner height of 3·8 ft., and a greatest width in the upper quarter of 1·9 ft. The concrete used for them consisted of one part of Portland cement, one part of Kufstein cement lime, four parts of sand, and four parts of gravel. The municipality of Vienna has all the sewers of the city constructed after this method. The concrete used for the bottom consists of one part of Portland cement, three parts of sand, and seven parts of broken stones; that for the lateral portions of one part of cement lime, two parts of sand, and two parts of broken stones.

PROPOSED METROPOLITAN LEGISLATION.

The Bill promoted by the Metropolitan Board of Works for the amendment of certain portions of the Metropolis Local Management Act and the Building Act, is appointed to be read a second time on March 3rd, when it will in all probability be referred to a select committee.

The short title of the Bill is Metropolis Management, Building, and Floods Prevention Acts (Amendment), and it is described as a Bill "to confer further powers upon the Metropolitan Board of Works with respect to streets and buildings and the protection of the metropolis from floods and inundations caused by the overflow of the river Thames."

The Bill is divided into five parts. The first part sets out the short title and defines the limit to which the Act shall extend, which is to be the Metropolis as defined by the Local Management Act of 1855; the second part relates to the laying out of streets, frontages of buildings, and theatres; the third part deals with certain amendments of the Building Act; and the fifth part treats of the penalties to be imposed for infringements of the Act, and exempts certain buildings and localities from its operation.

By the 5th clause of the Bill the Board propose to take power to carry out alterations in the naming and numbering of streets in the case of the default of any vestry or district Board to put in force any order made by the Board. The 87th section of the Metropolis Management Amendment Act, 1862, gives the Metropolitan Board power to authorise alterations in the naming or numbering of streets, but the carrying out of such alterations is left to the local authority, and there is no remedy under the existing law in case the local authority declines to carry out the order of the central body.

The 6th clause imposes a penalty not exceeding 10*l.*, and a further penalty not exceeding 40*s.* a day for every day the offence is continued, upon every unauthorised person who places any fence, bar, obstruction, or encroachment, in any street so as to impede the traffic. It would appear from this clause that the present law has

been found ineffectual to prevent obstructions of this kind in public thoroughfares.

The 7th clause is a very important one, and if it should become law will confer very large powers upon the Metropolitan Board, and will considerably affect the laying-out of building estates. As the law stands at present, any person desirous of building can give the Board notice of his intention to lay out any street or footway, such notice being accompanied by a plan and section of the proposed street or footway, and provided the proposed street be not less than 40 ft. wide and the footway not less than 20 ft. wide, and that the street or footway have two entrances open from the ground upward, the work can be lawfully carried out at the expiration of six months from the date of the notice without the approval of the Board.

In the Bill now before Parliament it is proposed, in case where it is intended to lay out a road, passage, or way for building, in such a manner as not to afford direct communication between two streets, to give the Board power to prevent such road, &c., being made without the approval of the Board; or the Board may approve of the laying-out subject to such conditions as they may think fit to impose.

Section 8 restricts the laying-out of streets for foot-traffic only, and proposes to confer power upon the Board to prevent the formation of such streets in case the Board should consider it inexpedient, or to approve of such streets being formed subject to certain conditions.

The 9th clause is intended to extend the powers of the Board under the 75th section of the Metropolis Local Management Amendment Act, and to enable the Board to impose and enforce conditions with reference to the space left in front of buildings erected in advance of the general line of buildings. This clause would appear to apply chiefly to shops built upon forecourts, and to be intended to prevent the objectionable practice of exposing goods in front of such shops. The law will of course only apply to additions made after the passing of the Act; but it will be to some a matter for regret that the law cannot be made retrospective.

Clause 10 proposes to give the Metropolitan Board the same powers as are conferred on Vestries and District Boards by the 75th section of the Metropolis Management Amendment Act, 1862, with respect to buildings erected beyond the general line of buildings. At present no building can be erected beyond the general line of buildings in any street or row of houses without the consent of the Metropolitan Board of Works; but the Vestries and District Boards alone have power to initiate proceedings in case of infraction of the law, so that if the consent of the local authority be obtained, the central and assumed controlling authority is powerless to interfere. The 10th clause of the Bill is intended to remedy this anomalous condition of the law and to give the Metropolitan Board of Works and the Vestries and District Boards concurrent jurisdiction.

The 11th clause proposes to give the Board extended powers over theatres and music-halls, to enable the Board to direct the doors of these buildings to be kept open, the manner in which they shall be fastened, and also to cause notices to be posted specifying the means of exit. In view of the lamentable fatalities that have recently occurred in theatres, it may be safely assumed that there will be very little opposition to these very moderate amendments of the law.

Clauses 12, 13, and 14 relate to the prevention of floods from the river Thames, and will enable the Board to authorise the continuance of temporary flood works in case the erection of a fixed dam would materially interfere with the transaction of business.

The 16th and 17th clauses deal with iron or other buildings of a temporary character, and give the Board power to approve of such buildings for a limited time, and to impose conditions requiring their removal within a certain period. It would appear from this clause that the Board has, at present, no power to approve of temporary buildings under the 56th Section of the Building Act.

The 18th clause is intended to restrict the stacking of timber within 30 ft. of a highway without the approval of the Board. This portion of the Bill was opposed by the timber trade, and is understood to have been withdrawn by the Board in deference to the remonstrances of the persons chiefly interested.

The 19th clause gives the Metropolitan Board power to authorise the construction of warehouses or other buildings used for trade or manufacture of a greater size than 216,000 cubic feet, to which such buildings are at present limited by the Metropolitan Building Act. This proposal had excited the susceptibility of the insurance offices, who object to the proposed alteration; and a deputation has been appointed to attend, and to place before the Board the objections of the offices to the suggested relaxation of the restrictions imposed by the 3rd subsection of the 28th section of the Building Act.

In the abortive Bill of 1874 for the amendment of the Metropolis Management and Building Act it was proposed to permit the construction of buildings of a greater size than 216,000 cubic feet without being separated by party-walls; but the maximum contents were not proposed to be allowed to exceed 300,000 cubic feet without the consent of the Metropolitan Board. The Select Committee to which the Bill was referred reported to the House of Commons that it was not desirable to fix any limit as to cubical contents in buildings other than warehouses, the proviso seeming to imply that the Committee were of opinion that it is desirable to limit the capacity of warehouses and trade buildings; but this is not quite clear, nor is it easy to ascertain the meaning of the form in which the recommendation of the Committee is framed, seeing that it was not proposed by the Bill to place any restriction upon the size of buildings other than warehouses.

Captain Shaw, in the evidence given by him before the Select Committee in support of the Metropolitan Board's Bill, in 1874, gave it as his opinion that the old limit as regards the size of warehouses was preferable to any increase. The Secretary of the Royal Insurance Company, who was called by the Board to give evidence in their favour, acknowledged, in cross-examination, that he looked with very considerable apprehension upon the proposed extension of the limitation as regards capacity from 216,000 to 300,000 cubic feet, and that he regarded the suggested amendment not as an improvement, but a decided deterioration. A similar opinion was expressed by the then manager of the Commercial Union Insurance Company.

By the 20th clause it is proposed to increase the size of the open areas required to be provided by the 29th section of the Building Act, the minimum being proposed to be 150 square feet at the least for buildings with a frontage not exceeding 15 ft., and increasing according to the extent of the frontage to a maximum of 450 square feet. It is not proposed by the Bill to prohibit this open space being built upon on the ground-floor.

The 21st clause provides that when any building is converted into a public building it shall be constructed to the satisfaction of the district surveyor; and the provisions of the 30th section of the Building Act are to apply as if such alteration or conversion were a public building. This appears to be a very important and necessary amendment.

Pipes conveying hot-water at low-pressure are proposed by the 22nd clause to be exempted for the operation of the 21st section of the Building Act.

Under clause 23 the Board are to be empowered to deal with ruinous, dilapidated, and neglected structures, and may, on obtaining a magistrate's order, require the owner, or in default the occupier, of such structure, to take down, repair, or rebuild it to the satisfaction of the Board. This clause appears to have been introduced to meet the case of such buildings as the neglected houses in Stamford-street and Argyll-street, Regent-street. A similar provision was contained in the Bill of 1874.

Clauses 24 and 25 have reference to dangerous structures. By clause 24 it is proposed to prevent the site upon which a dangerous structure stood, which has been pulled down by the Board under a magistrate's order, being again built upon until the costs and expenses of the Board with regard to such dangerous structure have been paid.

Clause 26, which consists of only three lines, is nevertheless a very important one. It provides that proceedings taken with regard to any irregular building shall not be prejudiced by the removal or falling in of the roof of such building. In the absence of any definition of a building in the Building Act, magistrates have generally accepted the interpretation that everything having a roof is a building, and when proceedings have been commenced with regard to an irregular building, and the defendant has removed the roof, a magistrate refuses to convict, and the proceedings thus come to an end.

The 27th clause seeks to remedy the omission in the Building Act with respect to arbitration between the building owner and the adjoining owner as to party-walls, which at present enables the adjoining owner practically to nullify the clear intention of the Act.

The royal palaces and all buildings, works, and grounds exempted from the operation of the Metropolitan Building Act, 1855, are exempted from the operation of the Amending Act. This seems only reasonable, but it is difficult to see why the Temple, Gray's Inn, Staple Inn, Furnival's Inn, and the close of St. Peter's, Westminster, which are not excluded from the older Act, should have exemption from the Amendment Act.

THE BATTLE OF CHÆRONEA.

EXCAVATIONS at a distance of five miles from the modern Greek village of Kapraina have led to some interesting discoveries. The ancient name of the place in question was Chæronea, and it was there that, on August 4th, B.C. 338, the Greeks were defeated by Philip of Macedon and his formidable Macedonian phalanx. On that fatal day 300 Thebans of the so-called "Sacred Band" fell and were buried on the battle-field. Some time ago, M. Stamatakis, the head of the excavating party, came upon the remains of these warriors. Further diggings have led to the discovery of a parallelogram, made by two walls 25 mètres long, and two others of 10 mètres, the depth of all being 2 mètres. The rectangular space thus enclosed is found to be the grave of the Theban warriors. At a depth of 4 mètres the excavators came upon the remains of 185 Thebans, all lying in regular rows and layers, besides the remains of forty more bodies, lying close together, in less regular order. There have been seven rows of the brave Thebans discovered so far. They are placed so that the heads of one row are on the feet of that beneath. All the remains show the traces of terrible wounds. One skeleton shows both the thigh-bones shattered with the lance; another, the lower jaw carried away; another, the skull fearfully crushed. No weapons have been found, the victors having taken them away as trophies. Among the remains there have, however, been discovered a number of bone buttons, with a hole in the middle; likewise several terra-cotta dishes, each with two handles. The excavations are being continued, with a view to find the remains of the rest of the Theban phalanx.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE fifteenth annual general meeting of this Institution was held on Tuesday evening last, at the offices, 27, Farringdon-street, Mr. Arthur C. Lucas, President-elect, in the chair, supported by Messrs. Howard Colls, Thomas Stirling, B. C. Fox, T. H. Winney, E. C. Rowe, W. Seymour, E. Brooks, G. Bugg, J. Robson, J. Allwright, W. A. Rhodes, and H. T. Bayes (treasurer).

The report and balance-sheet, read by the secretary (Mr. H. J. Wheatley), were of a satisfactory character. The income from all sources during the year ending the 31st of December last amounted to 536*l.* 16*s.* 1*d.*, comprising 277*l.* 1*s.* 7*d.*, made up of annual subscriptions and dividends, and 259*l.* 14*s.* 6*d.* donations given at the annual dinner, under the presidency of Mr. Stanley G. Bird. On that occasion the claims of the Orphan Fund were strongly urged, and of the total amount announced in response to Mr. Bird's eloquent appeal the sum of 214*l.* 11*s.* 6*d.* was, at the wish of the donors, devoted to this fund. Referring to this fund, the report states that of the two children who were the applicants for its benefits at the time of the dinner, one proved on investigation to be ineligible, and the second one was otherwise provided for, thereby rendering it unnecessary to purchase a new presentation as proposed. Of the sum subscribed, however, 200*l.* had been invested and placed to the credit of the Orphan Fund. With respect to the Relief Fund, the expenditure under this head (262*l.*) slightly exceeded the income, and it was earnestly hoped that fresh subscribers would be forthcoming, so that the usefulness of this important fund might not be impaired. There was a vacancy for one

pensioner, but there were nine pensioners on the books of the Institution, at whose cost also two children were being maintained and educated at the Orphan Working Schools. During the year several applications for temporary relief had been considered, and assistance promptly granted. The Committee had received information that a legacy of 100*l.* had been bequeathed to the Institution by the late Mr. William Ward, of Brixton Hill, uncle of the esteemed founder of the Institution. This was the first bequest which had been made to the society. During the year, the Committee had devoted a large amount of time to the consideration of the proposition (brought forward by Mr. Rider on the occasion of the annual dinner) for extending the operations of the Institution over the country, but they had not yet been able to take any practical steps in the matter. In conclusion, the report expresses the thanks of the Committee to the retiring President, Mr. Stanley G. Bird, for his liberality and great personal exertions on behalf of the charity during his year of office. In addition to the handsome sum received on the occasion of the annual dinner, there had been a further accession of clerks to the list of subscribers. The balance-sheet (duly certified by the auditors, Messrs. S. J. Thacker, Thomas Stirling, and Thomas Bishop) showed that the total income of the Institution for the year 1881 was (including a balance of 151*l.* 2*s.* 4*d.* brought forward from 1880) 687*l.* 18*s.* 5*d.* The subscriptions to the Relief Fund amounted to 187*l.* 19*s.*, and those to the Orphan Fund to 72*l.* 9*s.* The donations to the Relief Fund amounted to 32*l.*, and to the Orphan Fund to 200*l.* 8*s.*, the remainder of the income being made up of 43*l.* 19*s.* 7*d.* interest on invested fund. The total expenditure amounted to 500*l.* 8*s.* 3*d.*, leaving a balance in the bankers' hands of 187*l.* 10*s.* 2*d.* The expenditure included 205*l.* paid in pensions; 10*l.* in grants for temporary relief; 83*l.* 8*s.* 3*d.* for printing, advertising, rent of offices, secretary's salary, and other working expenses; and 202*l.* invested in stock (New Three per Cents.).

The Chairman, in moving the adoption of the report and balance-sheet, said it had afforded him very great pleasure to accede to the request made to him that he should become president of the Institution, and though he felt it would be a difficult thing to successfully emulate the energy of the retiring president, he would do all in his power in any way to aid the Institution, which was one which should command the adhesion of all builders' clerks. He could not help thinking that, considering the great number of building firms in the metropolis employing clerks, the number of members or subscribers was not so large as it ought to be. He trusted that at the end of his year of office the Institution would show increasing prosperity.

Mr. Brooks seconded the motion, which was unanimously agreed to.

Mr. Howard Colls, in moving a vote of thanks to the retiring officers, made special reference to the services rendered to the Institution by the president for the past year,—Mr. Stanley G. Bird,—who had, unfortunately, been so unwell during the past three weeks that he was unable to be present on that occasion. Mr. Stanley Bird's services to the Institution had been very valuable. Few men took so deep an interest as Mr. Bird in the welfare of the building trade and builders' clerks. He would, no doubt, have a worthy successor in the person of Mr. Lucas.

The motion was seconded by Mr. Rhodes, and duly carried, and Mr. Thomas Stirling, as one of the retiring officers, replied.

Mr. Arthur C. Lucas was then elected president; Messrs. S. J. Thacker, Thos. Stirling, and Thos. Bishop were re-elected auditors; Mr. H. T. Bayes was re-elected treasurer; Messrs. Thos. Bishop, E. Brooks, G. Bugg, B. C. Fox, E. C. Roe, and T. H. Winney, were re-elected members of the committee, of which, also, Mr. T. C. Holding was elected a member.

The meeting was then made special for the election of a pensioner. There was only one candidate, viz., William Harffey, of Balham-hill, seventy-eight years of age, employed for forty years in the office of Mr. John Loat, builder, Balham. On motion duly made, seconded, and carried, Mr. Harffey was duly elected.

Mr. Bayes, in proposing a vote of thanks to the chairman, said it augured well for the Institution that Mr. Lucas had become its president. He took a deep interest in the Institution, and was a worthy representative of the great firm whose name he bore,—a firm whose benevolence kept pace with its means.

The motion was seconded by Mr. Winney, and carried; and Mr. Lucas, in reply, thanked Mr. Bayes for the kind manner in which he had alluded to his father and uncle.

NORMAN STAIRCASE, CANTERBURY.

THIS Late Norman staircase, which we illustrate from a drawing by Mr. G. H. M. Addison, is one of our finest examples of transitional work. The beauty of the design is greatly enhanced by the rich tone which time has given the materials, and it forms by no means the least attraction of that architectural Eldorado, Canterbury.

A REMINISCENCE OF JOHN THOMAS, SCULPTOR AND ARCHITECT.

AMONGST our illustrations this week will be found *fac-similes* of sketches by the late John Thomas, whose works are to be seen in the royal residences at Windsor, Balmoral, and Buckingham Palace, in the mansions of some of our nobility, and in public buildings in many parts of the kingdom and abroad. He is, perhaps, best remembered, however, as the sculptor of the royal statues and stone enrichments at the new Palace, Westminster.

Many other drawings by Mr. Thomas, of much greater importance than those given herewith, are to be found, wherein his versatility in design and power of hand are more fully exhibited; but to those who had the pleasure of his personal acquaintance and friendship, these few outlines will serve as a slight memorial of one who was esteemed while living for the simplicity of his demeanour and the generosity of his heart, whilst the art-student of our present time,—many not knowing even his name,—may be induced to seek out and examine for himself the works of one who was "the right man in the right place, at the right time," and a worthy coadjutor of the illustrious architect who now reposes within the walls of the venerable Abbey, and in the shadow of his own great work.

Thomas was disinclined to and unaccustomed to prepare "show" drawings. He was, by the circumstances of life, a thoroughly practical man, and the enormous amount of work that passed through his hands could not have been executed had he bestowed much attention on the "get up" of his drawings. He was, therefore, generally content with sketches sufficient for the passing purpose, excluding anything beyond what was really required.

To the ever-increasing competition of late years may be attributed, in some degree, the desire of designers to spare no pains in the production of their drawings to captivate and satisfy the client's eye.

The ever-varying method and fashion of preparing architectural and decorative designs might furnish an interesting subject for an essay.

A visit to the Diploma Gallery at Burlington House (to those courageous enough to ascend the many stairs), where are designs by Soane, Wilkins, Scott, Hardwick, the Smirkes, the Barrys, the Wyatts, and, going back to nearly a century, the work of one John Yenn, clearly shows a great difference between the carefully-finished but somewhat feeble efforts of a few generations since, when compared with the vigorous but, in some cases, less minute drawings of more recent years.

Besides versatility, Mr. Thomas possessed in a marked degree other gifts necessary to success,—namely, industry and rapidity. As an instance of the latter, the writer of these lines well remembers on one occasion, during his pupilage, twelve large figures (cartoons for glass) being designed and completed by him during the interval of one evening.

Respecting his architectural and decorative designs, Thomas appeared to possess an inexhaustible fund of ideas,—he was never at a loss; but this power of originality was occasionally apt to induce him to bring together elements different in character, difficult to harmonise, and sometimes unhappy in effect.

Of recent years, where the rapid changes of style have developed freedom from precedent, such departures from the beaten track would pass unnoticed; but the devotee of art was more punctilious and exacting as to the "proprieties" a generation or two ago, and any form or detail differing from the prevailing method was subjected to sharp criticism.

As an architectural designer Thomas dealt most successfully with Elizabethan, and the chief buildings designed by him in this style, namely, Somerleyton Hall, Suffolk; and Preston Hall, Kent, show boldness and skill. With respect to the sister art of sculpture, it has been doubted if Thomas was gifted with that perception of refinement so necessary to the attainment of the highest position of this incomparable art, and sufficient to have enabled him to rise to the eminence of a Flaxman or a Foley. He was, indeed, too versatile with his accomplishments to have excelled in all. The calls upon his time and talent were so various and widespread that he could not for many years find that repose requisite to profound study; still it is evident that for some time previously to his death (being greatly influenced by the keen perception and refined taste of the Prince Consort) he was ambitious to produce works of lasting reputation: the Audience Chamber at Windsor may be mentioned as a noteworthy example.

One of Thomas's last efforts, viz., the colossal "Shakspeare" seated on a throne, supported by Tragedy and Comedy, seen at the International Exhibition, 1862, more recently at the Crystal Palace, and now in Aston Hall, Birmingham, is an effective design, though open to criticism. The pedestal is somewhat obtrusive, and detracts from the dignity of the group above.

That Thomas possessed considerable power the group alluded to fully exemplifies, and had he not been cut off in the prime of life, his subsequent designs, no doubt, would have exhibited an increasingly-refined character and expression.

The few sketches that go with these remarks are intended, as before stated, chiefly as a reminiscence. They are taken from designs for some of the Royal Arms with which the New Palace at Westminster is adorned,—the panel containing those of Richard III. being given in full; the other sketches will be recognised by students of heraldry. A few heads roughly sketched by Thomas are also added. E. A. H.

BUST OF THE GERMAN EMPEROR.

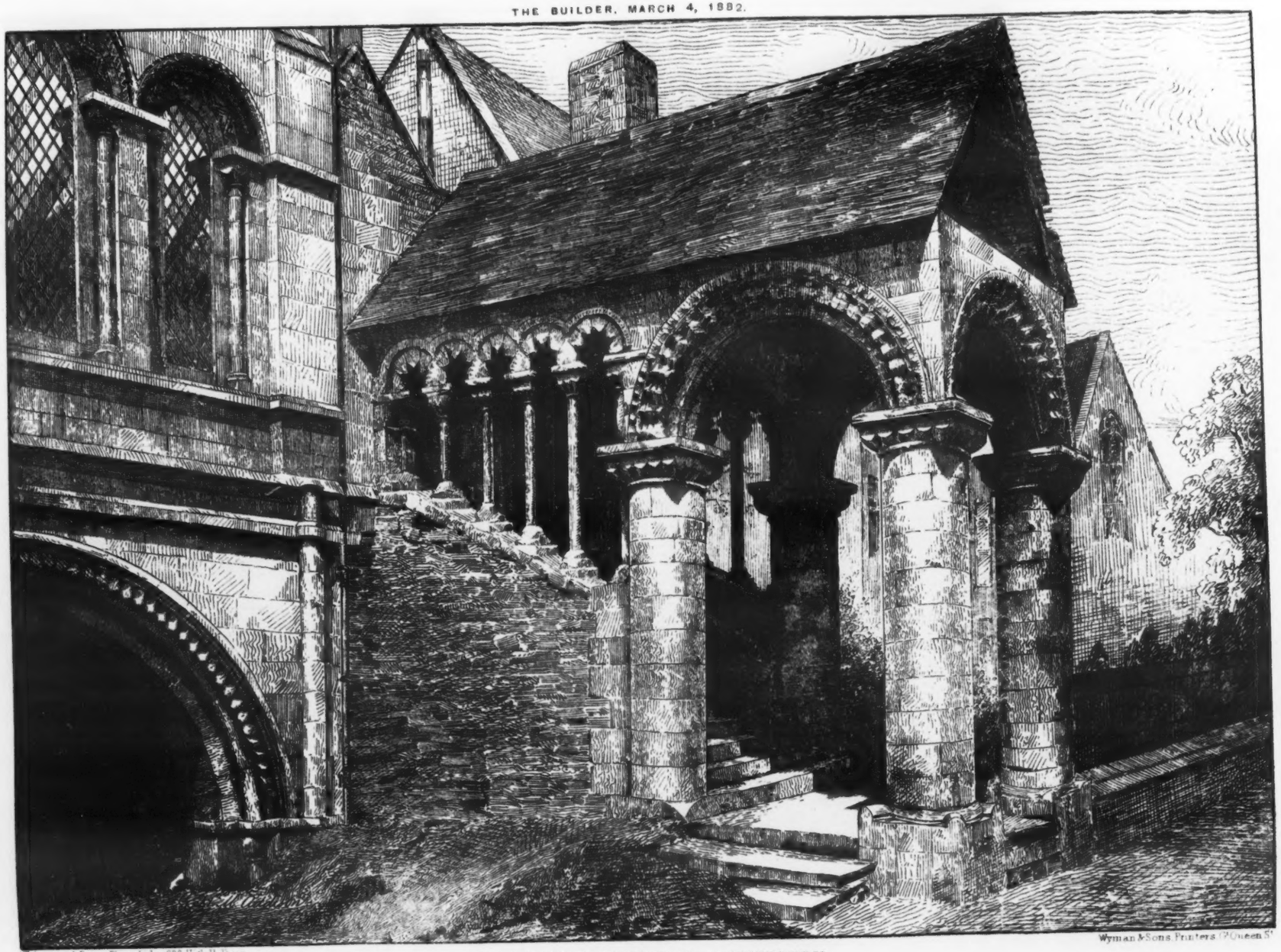
IT will have been noticed that we have taken occasion for some time past to place before English readers representations of commemorative and monumental sculpture executed abroad, and essays on various departments of the sculptor's art, supplied in all cases by men thoroughly conversant with the art, its wants, and its difficulties. Our purpose is obvious, and we have reason to believe the course taken has not been without effect. In our present number we add to our already long series of modern foreign monuments and commemorative groups a bust of the Emperor of Germany, with accessories, designed on the occasion of the Kaiser's last birthday, by Herr Eberlein.

Amidst a surprising amount of discontent amongst certain sections of the people, and the absence, to some extent, of those signs of material progress in Germany which might have been expected, artists are never tired of doing homage to the Emperor. Mr. Eberlein thus apostrophises the Kaiser on the pedestal of his bust:—"Father of the people and augmenter of their fame, ruler of the Empire, full of the highest heroism,—reverent love and adoration have for ever engraved thy image upon the hearts of thy people!"

THE BUSH INN, HUDDERSFIELD.

THIS structure is about to be erected for Mr. William Taylor. The materials are brick and red terra cotta. On the first floor, above the bar, is a billiard-room, facing the main road. On the right is the smoke-room, above the commercial or coffee-room. At the back is a yard enclosed by stabling and servants' rooms. The architect is Mr. B. H. Stone, of Liverpool. Tenders have not yet been invited.

Utilising Waste Power.—At Hatfield Park, the seat of the Marquis of Salisbury, the piles to support a coffer-dam across the river Lea have just been successfully driven by the power from a water-wheel situated at a distance, which power was transmitted by two dynamo-machines and a couple of wires to the gearing connected with a pile-driver of ordinary construction erected on a barge floating in the river. The machinery, although rather roughly constructed, worked well, lifting a dolly weighing from four to five hundredweight with ease and regularity.



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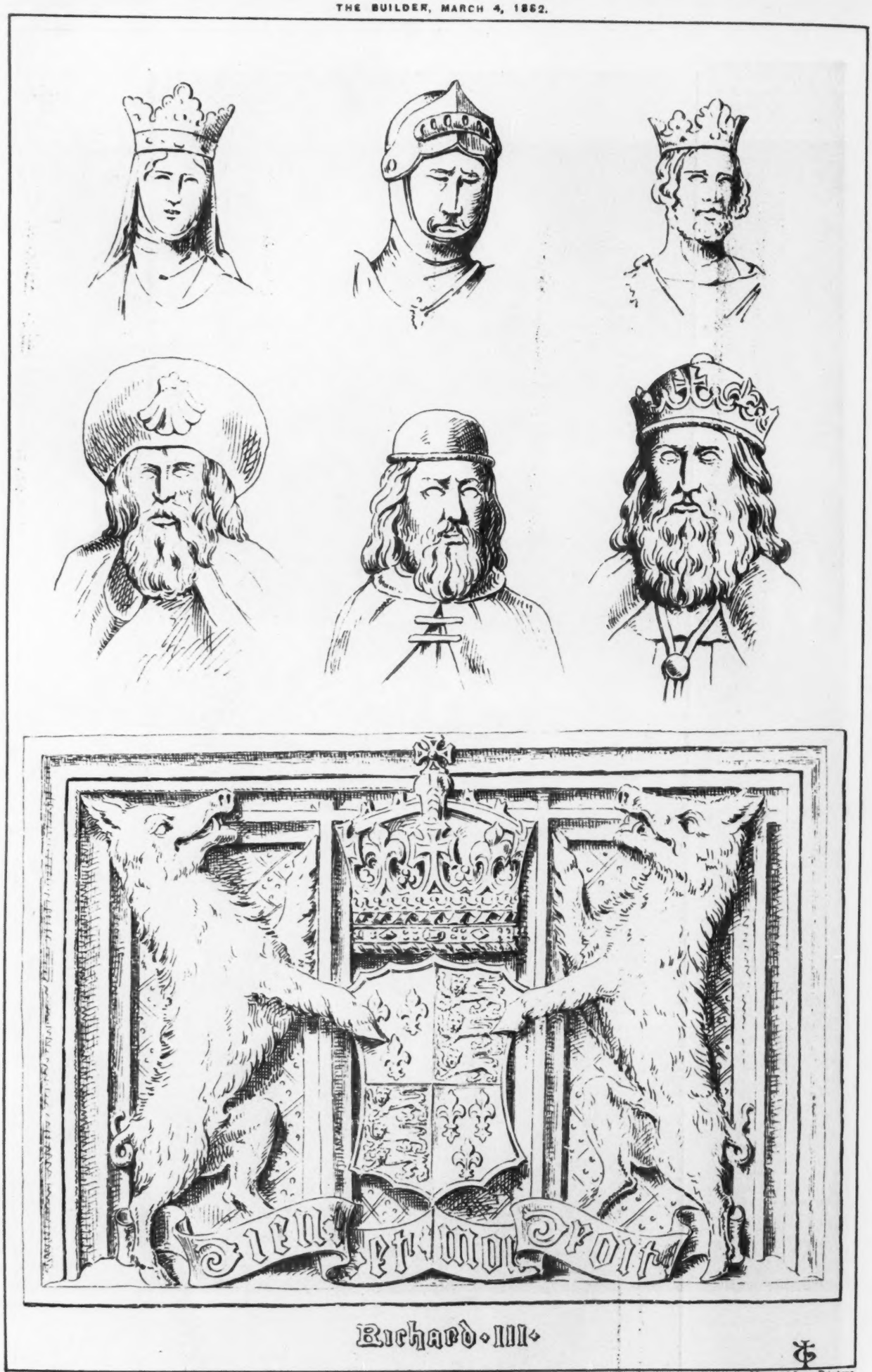
THE NORMAN STAIRCASE, CANTERBURY.



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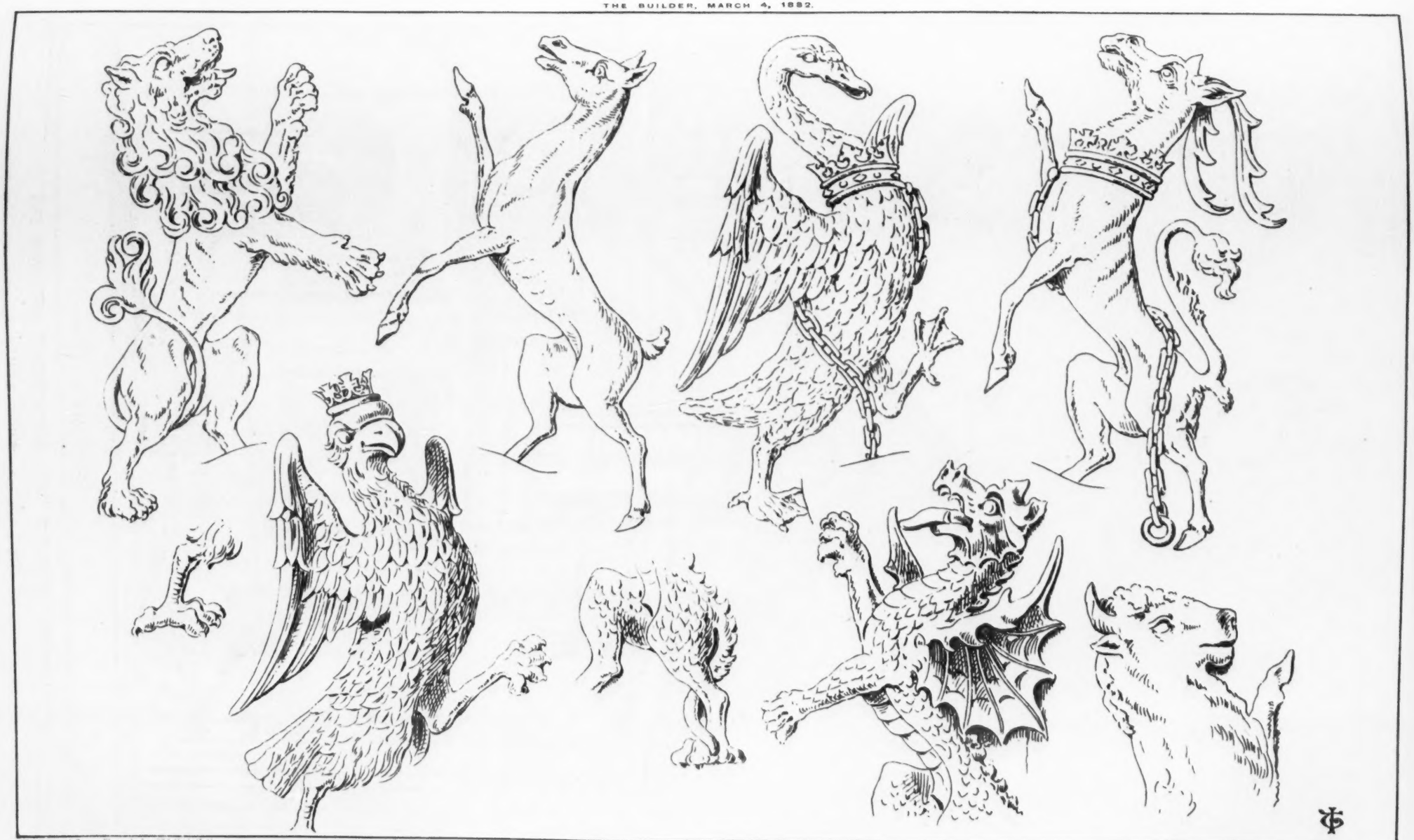
SKETCHES BY THE LATE MR. JOHN THOMAS, SCULPTOR AND ARCHITECT.

THE BUILDER, MARCH 4, 1882.

DESIGN FOR A BUST OF THE GERMAN EMPEROR.—By G. Eberlein, Sculptor.

DESIGN FOR A BUST OF THE GERMAN EMPEROR.—By G. Eberlein, Sculptor.



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SKETCHES BY THE LATE MR. JOHN THOMAS, SCULPTOR AND ARCHITECT.

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THE BUSH INN, HUDDERSFIELD.—MR. B. H. STONE, ARCHITECT.

PHYSICAL SCIENCE IN RELATION TO ARCHITECTURE.*

ANALOGOUS to the motion of fluids is the motion of the air, and upon a correct knowledge of the laws regulating this motion a great deal depends. Although the fact that air is an elastic fluid, ponderable, and subject to the action of natural forces, has been known for many years, it is only comparatively recently that this knowledge has been turned to account in relation to architecture, and that really scientific schemes of warming and ventilation have been devised. Even within our own recollection it used to be considered quite enough to provide an outlet for foul air, and if it was found practically that the foul air refused to avail itself of the outlet, the fault lay in the "nature of things," and the architect and builder were perfectly free from blame. But as soon as it was clearly understood that, after a maximum has been attained, it is just as impossible for air under ordinary pressure to make its way into a room, as for a vessel of a certain size to contain more than a certain quantity of water; or that no matter in what position an opening from an inner apartment into the external air exists, if the temperature of the apartment be higher than that of the external air, the cold air will have a tendency to rush in, rather than the hot foul air to go out,—as soon, I say, as these facts were appreciated, it became easy to lay down simple rules of ventilation, which rules have lately been applied with much success. If mechanical means of drawing away the foul air are provided, the place of the air that is drawn away must be taken by fresh air, and it is only necessary to arrange the inlets carefully, and see that the incoming air is not contaminated, to insure good ventilation. To take another instance, which was forcibly brought home to us all by the terrible Tay Bridge disaster, the pressure of air in motion,—that is, of wind,—on the roofs of buildings, is a subject well deserving scientific study. Fortunately, in this country, we have not to take such excessive precautions against wind as in other climates; but the inconvenience and danger caused by a high gale in London are very serious, and it is probable that a little extra care would make all roofs much less likely to be stripped by the wind than is now the case. The effect of a gale of wind acting upon a sloping roof is twofold; it never strips off tiles or slates at once, but any gust of wind of exceptional force is followed by a momentary vacuum, during the existence of which the atmospheric pressure inside the roof is greater than that outside, and this being the case, the tiles or slates, if simply nailed to battens, are lifted at the weakest point, their edges, when a following gust strips them off. If this theory is correct, it follows, as a matter of course, that tiles or slates tightly nailed to close boarding must be much better able to resist the interior force tending to lift them up than if only nailed to battens. This turns out practically to be the case. There is only one other matter in connexion with the air that I would mention, and that is, that the state of the air in any building materially affects its acoustic properties. Researches and experiments made by Professor Tyndall and others have proved beyond question that the waves of sound are most interfered with when they have to pass through strata of varying densities, and hence there is no doubt that the more effectually we ventilate our public buildings the better will their acoustic properties be. A knowledge of the scientific principles which govern the transmission of sound will enable us to prevent the passage of sound through walls, which is one of the greatest annoyances that dwellers in terraces have to put up with, and if the habit of living in flats should increase, this question will become even more important. I have frequently been struck with the small effect pugging under floors has in preventing sound being heard in the lower rooms, and this is because the pugging is nearly always too tightly packed. Any loose substance, such as sawdust or soft hair felt, in which the vibrations of the air lose themselves, and get broken up, would have far more effect; and it would not be a difficult matter to arrange party-walls so that they should be absolutely impervious to sound. *Optics* is another branch of science that immediately affects us, as the laws of the incidence and reflection of the rays of light must govern the size, and more particularly the exact position, of windows in any building, and in town architecture the value of a building depends very largely on the amount of light obtained for the various rooms.

I must now say a few words on the subject of that combination of the various branches of science to which I have already alluded, known as *Sanitary Science*. This was announced to us a few years ago as a new gospel, but it emphatically is nothing more than a knowledge of Nature's laws. This subject has been treated so exhaustively at the Institute within the last twelve months that I shall not occupy your time to any extent this evening upon it. Sanitary science is a striking example of the way in which all branches of physical science are allied to and bound up with one another. As was remarked by an eminent scientific man a few years ago,—"No one science is so little connected with the rest as not to afford many principles whose use may extend considerably beyond the science to which they primarily belong," and no one can possibly tell how our common every-day household arrangements may be affected by any new discovery in science, remote as it may appear at first. Nothing could have seemed less likely to affect house-planning and the sanitary arrangements of a building, than the researches of an eminent French chemist into certain diseases of animals, and yet it is upon the discovery of M. Pasteur that these diseases were caused by the presence of minute germs in the atmosphere, which upon finding a suitable *nidus* became active death-bearing organisms, that the whole germ-theory of disease rests; and this theory, as soon as it was proved to be scientifically accurate, gave the clue to the cause of that fatal disease typhoid fever,—a disease which modern civilisation, in the shape of extensive systems of drainage, rendered more fatal than it ever has been before, because it made its approach more insidious. Dirt and filth of all kinds are perceptible at once, and can be easily removed; but sewer gas, which will find its way into a house, however clean it may be kept, unless certain precautions are taken, is a far worse enemy; but this enemy can now be attacked with a certainty of success, the precautions necessary to be observed to prevent its entry into our houses being perfectly well known and easily carried out. Until, however, it was known that that this sewer-gas brought with it the germs which caused typhoid fever, all attempts at improving our system of drainage were abortive, because no one knew what had to be guarded against. The condition in which a number of large houses in the West End are now, or were till very recently, is a striking proof of the evil that may be done through want of accurate scientific knowledge. There can be little doubt that without ventilation of the drains, and the cutting-off of all house-drains from the main sewers, an elaborate and complicated system of drainage, like that of London, is the most noxious and pestiferous lethal engine that could be devised, and that we are now able to escape from it is solely due to the progress of physical science. As I have already referred to that part of sanitary science which relates to ventilation, I need not allude to it further; but I must say a word or two as to *Warming*. Now the phenomena of heat are a great deal more complicated than many people suppose, and if I were to attempt to explain the scientific principles involved in the transmission of heat, I should most probably lead you astray in a fog of my own creating; but if any one wants to investigate the subject for himself, he cannot do better than consult that admirable text-book on the theory of heat by Clerk-Maxwell. It is, however, only quite recently that these scientific principles have been recognised in the manufacture of stoves; but the Smoke Abatement Exhibition has doubtless done much good in this respect, as it has led people to think about the best mode of combustion, and the best method of radiating heat. Recent investigations have shown that light and heat are one and the same thing, but perceived by us through a different channel, and the "theory of exchanges," as it is called, explains why we use polished silver for a teapot, lampblack for stoves, and why we whitewash the roof of a house to keep it cooler in summer, though it is not generally known that the same application tends to keep the house warmer in winter by diminishing its power of radiation. While on this subject I will briefly refer to one very important fact. If the air through which radiant heat passes be perfectly pure, it is almost completely diathermanous; that is, it does not get heated itself, although it transmits the radiations; but the more impure it becomes, the more it stops the radiations, and takes up heat itself. Hence, the purer we can maintain the air in any place of assembly, and the freer from dust, the less effect will the heat which is being radiated into the room have in raising the temperature of the air itself. This shows the great desirability of filtering by means of horse-hair, wadding, or something of that sort, all the air which passes into a room through the ventilating openings.

I have left to the last that branch of physical science the practical developments of which are of most recent birth, and yet which bids fair to be of the greatest importance to mankind, and some knowledge of which will soon be a necessity for architects: I allude to *Electricity*. Although it is many years since the phenomena of electricity were first observed, and their wonderful character commented on, it is only within the last few years that its properties have been turned to practical account; but lately the progress has been so rapid that there can be little doubt we are on the brink of a more gigantic revolution than the one effected by the invention of the steam-engine in its practical form rather more than a hundred years ago. The number of points at which our work is brought into contact with the inventions of electricians is increasing daily. A few years ago electric bells were about the only things in connexion with houses that called for any knowledge of the subject, and these were generally looked upon as expensive toys; but there are now so many different patents for electric bells, and the simplicity of the system is becoming so widely known and appreciated, that I suppose there are few of us who have not been consulted on the subject by clients, and a slight acquaintance with the principles involved, enabling us to form an opinion as to the probability of a battery lasting, as to the good or bad method of insulating the wires, and various other points, is very desirable, otherwise we are completely in the hands of the men whom we employ, and are unable to exercise the slightest supervision over the work. But the subject that is now engrossing so much attention is the lighting of houses and shops by electricity; and you may be sure that before long the question as to the best method of artificially illuminating the new buildings we design will be one that every architect will be expected to give an opinion upon. Electric light systems are divided into two great branches,—the arc-light system and the incandescent systems,—and the question as to which is the more suitable in any particular case will have to be decided according to the conditions which have to be complied with in that case: hence some knowledge of the advantages and drawbacks of each system is essential. Before leaving the subject of electricity, I may mention the report, recently printed, of the Committee on Lightning Conductors, which is a good example of the benefit arising from a combination of scientific with architectural knowledge. Any one who carefully studies that report will gain a knowledge of the subject that it would have been absolutely impossible to acquire before its publication.

Let me now mention a matter which appears to me of considerable importance to our profession, but which I can only glance at now,—and that is, the preliminary education of an architect. I have a very strong opinion that the majority of architectural students leave school too early. We call ours a profession, and rightly so, as it is one of the most honourable and arduous of professions. If a boy is destined for the profession of Law or Medicine, not only is he kept at school till he is eighteen or nineteen years of age, but in nine cases out of ten, he has, in addition, a university course, if not at one of the older universities, at such institutions as University College; but it is no uncommon thing for boys to be articled to an architect at fourteen or fifteen years of age, before the preliminary education can possibly have been completed; and I believe the results of this system are altogether bad. No amount of after-study can compensate for the loss of the two or three years at school or college after the age of sixteen. The compulsory Examination recently set on foot by the Institute will, I hope, do much to obviate this, and I should be glad to see the scheme of examination framed so as to offer a premium for having passed certain public examinations. For example: that candidates who have passed the senior Oxford or Cam-

* Paper read by Mr. J. Slater, B.A., before the Architectural Association on the 17th ult. Continued from p. 394.

bridge non-gremial, or the London matriculation, should be exempted from taking certain simple scientific and literary papers that would otherwise be compulsory, and in this way I believe much good might be done. I have endeavoured to show in how many ways a knowledge of physical science may be of advantage to an architect, and I can quite imagine that some such objection as this has occurred to your minds while I have been speaking: "Granting that such knowledge would be beneficial, still the range of subjects is so vast that it would be impossible to gain a thorough acquaintance with them." This I fully admit; but my point is, that a slight acquaintance with these subjects is much better than none at all. As was pointed out by Dr. Siemens some few months ago, a little knowledge is *not* a dangerous thing under certain conditions: these are that the little knowledge be well digested, and that its limits be kept always clearly in view. Although it may seem paradoxical to say so, yet it is a fact that a little knowledge of a subject will often enable a man to see clearly that he knows nothing at all about certain branches of that subject; whereas, if he had no knowledge at all, he might think he knew all about it. There are so many matters closely allied to architecture which are daily becoming more and more important, for which supplementary contracts are obtained, that if we are absolutely ignorant of them, we are wholly at the mercy of the individuals who are employed to do the work, so that I do not think any one should be deterred from gaining a slight acquaintance with scientific subjects because of the impossibility of mastering them. Just as a slight knowledge of a language will not enable us to go at once and read the books written in that language, but will, at any rate, help us to verify a quotation; so a slight knowledge of science will assist us to understand somewhat of its language, and, most important of all, will prevent our being the victims of gross deception. I remember hearing a friend of mine, who has had a thorough scientific training, once make a remark which struck me as being a very forcible one. He said,—"There are a great many branches of science that I know nothing about, but I will defy any man to talk nonsense to me on any scientific subject whatever for five minutes without my finding him out." Another objection has probably occurred to you of this kind. What is the use of an architect's taking time to study certain subjects, when he can always call in a specialist who has made an exhaustive study of the same subject? This objection is a very plausible one, and requires to be examined somewhat in detail. In the first place, questions often crop up unexpectedly, which require a decision of some sort to be arrived at at once, and it frequently happens that a specialist is not at hand to advise. In such a case, a slight acquaintance with a subject might enable the architect at any rate to meet the difficulty temporarily, and then, if it should happen that an expert has to be called in, no harm would have been done. Then comes the question of expense, —which is frequently a serious matter to the client,—and here I am touching on a subject that was referred to a few months ago by Mr. Cole Adams in his interesting paper on Barnacles. Specialists invariably charge heavy fees, and quite rightly. If a man has taken the trouble to master thoroughly any one branch of his profession, and limits his chance of employment to that branch, he ought to charge highly for his knowledge and experience, and I quite admit that in many cases an architect would act wisely to call in a specialist to advise with him, just as a medical man calls in a consulting physician in urgent or difficult cases; but as the family doctor ought to be able to treat all cases not requiring serious and exceptional treatment, a patient would have good cause for complaint against his medical man were he to advise calling in a physician for every little ailment: so it seems to me a client may justly complain if he finds his architect unable to decide what course to adopt in matters of drainage and other scientific subjects which do not present any great difficulty. He imagines that for the fee which he has to pay he is going to obtain skilled advice and assistance throughout the whole of the work which he entrusts to his architect, and will be very likely to grumble at having to pay several extra guineas for an extraneous opinion. There is further one very decided danger in consulting a specialist. You have probably all heard of the physician who discovered a certain disease that was named after him, and after his discovery it is said that no patient ever consulted him but he found out that the man was suffering from that very disease; just in the same way a specialist who has made any one subject a special study is almost certain to have strong opinions as to the causes which lead to the existence of a certain state of things, and he will therefore be very likely to find out the existence of these causes, and to advise expensive remedies which *may* not really have been required; whereas, an examination by an unbiassed man who has had a scientific training, and is not apt to jump at conclusions hurriedly, may very possibly discover some simple cause for what is wrong that a very slight expense may put right. What is likely to be the effect on the general public,—and you must remember that the general public are made up of individuals, and that the way in which we treat our individual clients is a factor in the estimation in which the profession as a whole is held by the public,—what is likely to be the effect on the public if they find that when the architect is consulted on some faults of drainage, he says, "Oh, Mr. So-and-So is an authority on this point, and you had better call him in," or when he is asked his opinion as to the cause of defective ventilation, he refers to some other eminent authority? Will not the public gradually get to have a low opinion of the profession generally, and begin to question the necessity of employing an architect at all? Are not some of the articles that have recently appeared in some of the papers a proof that this opinion is becoming held more or less? Ought we not, then, to do our utmost to prevent such an opinion gaining ground? We can never tell what matters may be referred to us in the ordinary course of our practice, and we must always remember that the specialist knowledge of yesterday is the common knowledge of to-day.

It may possibly be objected that there are many cases such as I have mentioned which do not come within the legitimate province of an architect, and that if he were to attempt to qualify himself for undertaking such work, he would only be intruding into the domain of the engineer. I hold that any work appertaining to the structural stability of a building, to its sanitary condition as regards drainage, warming, or ventilation, and generally to its suitability for the purposes for which it is intended, is most distinctly within the province of the architect, and if he gives up this to others and endeavours to retain only the artistic part of the work, he will soon find that this is gone too. We do not find that engineers make any scruple about designing the ornamental features of a bridge or any other erection they may have to construct. We find auctioneers and surveyors taking to themselves the title of architect, and designing the houses that are to cover the estates which they have to sell and develop. We are beginning to find plumbers and builders calling themselves sanitary engineers and architects; and how is it that they gain the ear of the public? Simply because the public think that if they go to a man of this sort they go to a practical man; whereas, if they go to an architect they will find only an artistic *dilettante* who has to go to some one else for advice upon practical points. Depend upon it, if we are to hold our own in the keen competition which now exists, it will not be by taking any so-called high ground as to our being artists and nothing else, but by convincing the public that we are practically acquainted with every branch of our profession, that we can meet the plumber and the surveyor on their own ground, and by showing that, in addition to practical knowledge, we can give that artistic finish which is the result of a cultured education, and which can never be acquired by any one without the patient study to which the early years of the architectural student's life should be devoted. There can, however, be no greater mistake than to think that there is anything derogatory to the true artist in being practical, and in having a knowledge of science. As a proof of this I should only need to point to that admirable address delivered so recently by the leader whose loss we all deplore, to show how Mr. Street, artist as he was in his every fibre, worked strictly on a scientific basis, and his works are a standing proof that the true artist never sacrifices strength to beauty, or lays on ornament for the sake of doing so. But as a matter of fact the greatest artist cannot dispense with scientific knowledge. The sculptor may have the highest manual dexterity, the figure-painter the lightest and most delicate touch with the brush; but without a knowledge of the anatomy of the human figure each will be powerless to produce a statue or a painting that shall live as a thing of beauty for ever. So with the landscape-painters: the greatest of them are those who live with Nature and study her inner workings, and not only her surface aspects; who watch the growth of flower and shrub, and note the effect upon them of storm and sunshine, who ascertain the causes by which the various tints in the atmosphere are brought about,—in a word, who make themselves thorough masters of one or more branches of physical science.

The value of scientific training is by no means limited to its direct results; those that are indirect are of equal importance. A man who has acquired a scientific habit of thought will always exercise a close observation of the facts that come under his notice; he will feel that of the causes which have led to the existence of any state of things that he may be called upon to examine, those that lie on the surface, and are most obvious, may very probably not be the real ones; he will not allow himself to be led away by superficial similarities; and, above all things, he will not be hasty in jumping at conclusions. Useful as these qualities are to every one, they are of especial value to an architect in what I may call the collaterals of his profession. When once a man gets into regular practice, he will find that designing buildings forms but a part,—sometimes a small part,—of his work, which frequently consists of reporting upon the condition of buildings, settling disputes, giving evidence in courts of law, and such matters as these; and herein the indirect qualifications, which are the results of scientific study, will be of the utmost service.

I have thus endeavoured to show you, very imperfectly, how intimately we architects are interested in the advance of physical science. As I said at the commencement, so I would repeat now, that I hope I shall not be considered as in the least opposed to our being artists: it has been my endeavour to show that art and science are not antagonistic, but rather twin sisters, who ought never to be separated, and it is to any tendency to separate the two that I am opposed. Captivating as art is to her votaries, science is equally so to hers; and, in conclusion, I think I may safely promise this, that he who takes up the study of any branch of science connected with architecture will never regret having done so, but will find in the pursuit of it growing delight and an ever-increasing fascination.

DISCUSSION.

The Chairman (Mr. Gilbert R. Redgrave) said that it could not be doubted that the study of natural laws which Mr. Slater had advocated was of the utmost importance to architects. Mr. Slater had raised the question whether lads who were intended to follow the architectural profession should not stay at school longer than was at present the general rule. Abroad, young men intended to become architects after they left school went to the École Polytechnique or some such technical institution for three or four years before entering an architect's office. In such institutions the young foreign architect acquired a great deal of scientific and theoretical information. The practice of this country, of taking lads into architects' offices as pupils directly they left school might give them good opportunities of acquiring business habits, but it hardly assisted them in acquiring scientific information of the kind referred to by Mr. Slater. Some of the sciences, as Mr. Slater had truly said, were intimately related to the work of the architect. Some knowledge of chemistry alone, bearing as it did upon the nature and composition of materials, would be found of great value to the architect. As to sulphuretted hydrogen being a test of the purity of white-lead, he remembered an interesting circumstance connected with that subject. Some years ago two strips of paper were painted with pure white-lead paint. One of the strips so prepared was hung in a country privy, and the other was placed in the National Gallery. After some time had elapsed, it was found that whereas the strip in the National Gallery had very speedily become blackened, the strip in the country privy showed no discolouration. He thought that Mr. Slater had very wisely insisted upon the importance and necessity of sanitary knowledge to an architect. Within, comparatively speaking, the last few years, a large number of our towns had been

drained and sewered, and since that work had been done we had heard a great deal about the prevalence of zymotic diseases, caused, it was urged (and in some cases with too much ground), by sewer-gas being laid on to our houses. Ten years ago it was a very favourite idea with medical writers that the germs of such diseases were principally, if not entirely, conveyed by the medium of water, but that idea seemed to be being superseded by the theory that the germs were conveyed by means of sewer-gas. Perhaps there was a great deal of exaggeration in what had been said as to the spread of zymotic diseases since towns had been sewered, and certainly such statements had been strongly disputed, especially in Germany. In Munich and Hamburg, towns which were formerly very subject to diseases of a zymotic character, there had, he believed, been a great diminution in the deaths from zymotic diseases since those towns had been sewered.

Mr. L. C. Riddett proposed a vote of thanks to Mr. Slater for his admirable paper, which would, he hoped, have the effect of stirring them all up to apply themselves with energy to the study of some of the essential matters of which Mr. Slater had spoken. With regard to the education of young men destined for the architectural profession, the education which was afforded by an ordinary middle-class school would be difficult to match on the score of costly inefficiency. Such schools seemed to regard the education which was given at Eton or Harrow as the very *beau ideal* of education, and consequently when young gentlemen left their "academies" to enter an architect's office, they had acquired very little scientific or other useful knowledge. He believed that as the world became more cosmopolitan in character we should see adopted in this country some such system of architectural education as that in vogue on the Continent. Mr. Slater's mention of the value of personally mixing and watching the behaviour of specimens of mortar, cement, and concrete, had recalled to memory the fact that in the office of the late Mr. G. R. Burnell, in Bedford-row, twenty years ago, were to be seen a number of little boards containing samples of the kind. Mr. Burnell, as was known, made a particular study of the chemical composition of stone, cement, plasters, &c., and no doubt he had found the practice referred to a very convenient and instructive one. As to the question of pugging for floors or walls, in order to prevent sound from passing from one apartment to another, he was inclined to think that slag-wool was the best material that could be used. It was an admirable non-conductor of sound, and was absolutely indestructible.

Mr. E. G. Hayes, in seconding the motion for a vote of thanks to Mr. Slater, said he thought it was most important and desirable that architects should have some acquaintance with the various branches of science with which Mr. Slater had dealt.

Mr. A. B. Pite said that, looking at the matter from the students' point of view, he would ask, What time had they to study all the sciences? Although he had been six years in the profession, he was only now beginning to understand and appreciate the laws of design, and design was certainly a most essential study for an architect. In moving about among the members of the Association he found that the young fellows who were the most practical and scientific were the least capable as designers; while, on the other hand, the best designers knew little about science. After all, was it really necessary for an architect to understand all that Mr. Slater had said as to the composition of bricks, the strength of iron and timber, and all that sort of stuff? A great deal had been heard lately about the coming Obligatory Architectural Examination. He thought the Royal Institute of British Architects would do more good if they could obtain a law compelling builders to pass such an examination. It was all very well to talk of foreign methods of architectural education, but it should not be forgotten that on the Continent, owing to enforced studies at the Ecole Polytechnique and similar institutions, the young architect was frequently thirty years of age before he was allowed to do anything for himself. With all its defects, he was in favour of the English system of pupilage, and it would, he thought, be admitted that, considering the way in which architectural pupils were so largely left to "fish" for themselves, the progress of our street architecture was very satisfactory as compared with that of Paris and other Continental cities.

The motion having been put and carried,

Mr. Slater, in the course of his reply, said that while he admitted that the early years of an architect's career should be mainly devoted to design, that part of his work should not be allowed to degenerate into mere draughtsmanship. His contention was that if young men who were destined for the profession remained at school two or three years longer than was now usual, so as to have the opportunity of mastering a great deal of the scientific principles of which he had been speaking, they would be much better prepared for the real work of the profession. In conclusion, he urged those of his hearers who were pupils not to entertain the notion that when their articles were completed they had no more to learn. The architect who was worthy of the name never left off learning.

The meeting then terminated.*

ARCHITECTURAL PROPORTION.

A MEETING of the Architectural Section of the Philosophical Society of Glasgow was held a few days ago in the Society's rooms, 207, Bath-street, Mr. James Sellars presiding. Mr. T. L. Watson, architect, read a paper on "The Natural Laws of Proportion." They were all familiar, he said, with certain purely artificial and arbitrary laws of proportion which have been more or less used by architects in the past in connexion with what were called, somewhat arrogantly, "the five orders of architecture." They were originally formulated by the Romans, to enable them to repeat the forms of Grecian architecture in their own buildings, and they had been handed down to us in the pages of Vitruvius. During the Middle Ages, fortunately, the rules of Vitruvius were lost or forgotten, but with the revival of classical learning they were brought to light, and eagerly adopted and extended by the architects of the Renaissance. At the beginning of the present century it was discovered that the inspiration which our architects sought might be obtained directly from Greece, instead of, as before, from Greece by way of Rome. After referring to the arbitrary scale of proportions formulated by Vitruvius, and developed by his successors, as a set of artificial or unnatural laws of proportion, Mr. Watson said that the works of the past ages should be studied, not that they might accurately reproduce their forms, but that they might discover the principles in which these forms took their origin, and apply them to the particular conditions of their own works. If they rejected arbitrary rules without adopting principles of some kind, they would not make any united progress. They might escape from the Egyptian bondage of the Vitruvian laws only to find themselves in the wilderness. It became thus important, if there was any fragment of principle to be discovered, that they should not allow it to escape. In the pages of Viollet-le-Duc and Ruskin there was a constant reference to principles, and it had occurred to the speaker to bring before the section the following propositions in regard to the base, suggested chiefly by their writings, which tended chiefly to establish architectural forms as a basis of natural law:—(1) The projection of the base to a column ought to be greater than that of the base to a wall; (2) that the further apart columns are from one another the greater should be the projection of their bases; (3) that the less the diameter of the column the greater proportionally may be the projection of its base; (4) that the less the actual size of a column the greater proportionally may be the projection of its base; (5) that the height of a base in proportion to the height of the wall or column which it supports should be less for a high wall or column than for a low one, and its height in proportion to its projection should be greater; (6) that a base should be steeper in proportion to its height above the spectator; (7) that the base of a square pillar should have less projection than that of a round one; and (8) that a base formed in hard material may have a greater projection than one which is formed in a softer material. These were some of the considerations which might affect the setting-out of the height and projection of a base moulding. He would not have it supposed that the details of a building were to be worked out like a mathematical problem, or like a logical syllogism, in which a certain conclusion was rigorously drawn from given premises. The architect must reason and exercise the instinct or intuition of an artist, and this artistic instinct was the ultimate court of appeal to which every doubtful point must be referred. At the present moment architects were almost free from the tyranny of arbitrary rules of proportion, and they no longer restricted themselves in their work to give varieties of one style, and that style a borrowed one. On the contrary, they derived their inspiration from every age and from every country. Having abandoned arbitrary and empirical laws of proportion, they had as their goal the development of a consistent architectural style suited to our wants, and at the same time adapted to our means of satisfying them. If this object was to be attained, it must surely be by a system of selection, controlled by natural laws. The whole body of architects, and, in a sense, the whole community, must co-operate if this great object was ever to be accomplished.

* At the commencement of the meeting, the following gentlemen were elected members, viz., Messrs. R. S. Day, J. N. Cooper, F. Carew Smith, H. A. Paley, F. B. Banham, and T. M. Deane.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

BACK-TO-BACK HOUSES.

ON the 24th ult. the quarterly district meeting of this Association was held in York. Through the courtesy of the Lord Mayor, the members met in the Council Chamber of the Guildhall. Mr. Lewis Angell, of London (past-president and founder of the Association), occupied the chair.

Mr. Styan, the City Surveyor, read a paper on "York and its Public Works," describing the sewerage of the City, the Cattle Market, Lendal Bridge, and the York Bonding Warehouses.

Mr. E. R. S. Escott, Borough Surveyor, Halifax, contributed a paper (read for him in his absence by Mr. Cross) on "Back-to-back Houses." The author treated first of the various kinds of labourers' dwellings. There was the "flat" system, which had been extensively adopted, with all modern sanitary improvements; then there was the "through" house, with garden in front and yard behind; but the North of England stood alone with what was known as the "back-to-back" system. The deserted old town mansions, divided and sub-divided into separate dwellings, were the most unsanitary and objectionable class of dwellings. The "through" house was beyond the reach of ordinary labourers. The accommodation afforded by a well-constructed "back-to-back" house was best adapted for the poor. Such houses occupied an area of about 36 square yards, having a frontage of 21 feet, and being 17 feet in depth. The accommodation was: "keeping" cellar and coal-cellar below the surface of the street, a large living-room with scullery on the ground floor, two bedrooms, and attics. The cost of such houses was from 130*l.* to 140*l.*, including paving and draining the adjoining street; and the rent 3*s.* 9*d.* to 4*s.* per week, the landlord paying all rates and taxes. He knew of no class of house which better fulfilled the requirements of the labourer's family than back-to-back houses.

Mr. Lobley (Hanley) said the paper might be termed "an apology for back-to-back houses." Such houses were only to be found in the North of England, and he hoped that they would not long be allowed to exist anywhere in England.

Mr. Gamble (Grantham) strongly protested against back-to-houses, which were far more unhealthy than houses with yards.

Mr. Fowler (Leeds) thought that back-to-back houses ought not thus to be discouraged. Many such were now being built in Leeds. There was far greater risk of contagion and infection in "block" houses.

Mr. Hall (Stockton) condemned back-to-back houses on every sanitary consideration.

Mr. B. C. Cross, C.E. (Dewsbury), said he was surprised to find a gentleman of the experience of Mr. Escott in favour of back-to-back houses. He did not see why "through" houses, with entrances back and front, should not be adopted for the working-classes in Yorkshire as well as elsewhere.

Mr. Hewson (Leeds) said that on the score of morality and health back-to-back houses ought not to be allowed. If it had not been for these houses, there would not now be such a great outcry in the North for fever hospitals.

Mr. Scriven (Pontefract), Mr. W. G. Penty

(York), Mr. Tudor, Mr. Jennings, Mr. Hoomes, and other gentlemen also condemned the views of Mr. Escott.

The Chairman said he thoroughly endorsed every word which had been said against back-to-back houses. He was glad that there was such unanimity of opinion against such houses. From every point of view, the system was reprehensible, especially as regards ventilation.

CENTRAL ASSOCIATION OF MASTER BUILDERS OF LONDON.

THE annual meeting of this Association was held on February 28, at the offices, 27A, King-street, Covent-garden, Mr. G. F. Trollope, the President, in the chair. The meeting was largely attended, and included the following:—Messrs. F. J. Dove, W. J. Adamson, H. H. Bartlett, Frank Kirk, John Greenwood, A. Thorn, J. Howard Colls, Stanley G. Bird, James Greenwood, John T. Chappell, John Woodward, G. S. Pritchard, George Wall, W. Macey, George Adamson, Thomas Gregory, A. Scott, W. J. Botterill, J. H. Read, J. W. Hobbs, &c., &c.

The President, in proposing the adoption of the report, congratulated the trade of London on the amicable relations still existing between employers and employed.

In seconding the proposal Mr. Stanley G Bird (President of the National Association of Master Builders of Great Britain) stated that among other objects carried out during the past year was one of great importance to the building trade and its various branches, viz., the establishment of the "Builders' Accident Insurance, Limited." He stated that the business done up to the present time was beyond the most sanguine expectations of its promoters. The trade had largely responded to the appeal of the directors, and it was expected that the annual report would be of such a satisfactory character as to enable them to show a large surplus. He reminded them it was essentially a Mutual Company. A bill, promoted by the leaders of the Trade Unions, has been introduced into the House of Commons to amend the "Employer's Liability Bill." There are several clauses which will seriously effect the trade, and the Committee will have to carefully watch its progress. The Chairman then referred to the late conference of architects and surveyors, and regretted that the builders had not been invited to attend, as matters were discussed which were of vital importance to them. It was hoped that a conference of architects, surveyors, and builders, may be held at an early date.

The President then informed the meeting that he wished to retire from that office, and proposed Mr. F. J. Dove as his successor. Mr. Dove, having been unanimously elected, took the chair.

The meeting then proceeded to elect the officers and committee for the ensuing year. Vice-Presidents: Mr. William Brass and Mr. George Burt. Treasurer: Mr. Henry G. Smith. Honorary Vice-Presidents: Mr. Stanley G. Bird, Mr. Benjamin Hannen, Mr. Charles Lucas, and Mr. G. F. Trollope, and a committee of twenty members. A Select Committee was appointed to consider and revise the rules of the Association, and a vote of thanks was passed to the late President for the able services which he had rendered during his period of office.

TRAMWAYS IN LIVERPOOL.

AT the ordinary general meeting of the shareholders of the Liverpool United Tramways and Omnibus Company, held last week, the report of the directors stated that during the past year several extensive blocks of stabling and other buildings for the use of the company had been erected. They also reported that they had given considerable attention to the question of the mechanical propulsion of tramway cars; and they had not only inspected the tramway engines now working in several towns, but had offered all reasonable assistance to the makers of the same to facilitate the practical testing of these engines in Liverpool. Several trials had already been made here, but, so far, whether from the heavy gradients of the city, or owing to inherent imperfections in the engines themselves, apart from all estimate of the comparative cost, the result of these trials had not been such as to warrant the directors in recommending their adoption by this company.

Mr. George Hopkins, the engineer to the company, in his report to the directors, says that the total length of streets in which tramways are constructed and worked by the company as the present date is about 33¼ miles of single line. The Corporation of Liverpool obtained powers, in 1880, to construct additional tramways in about twenty miles of streets, which will be proceeded with almost immediately, and the Bootle Corporation about six miles,—together, twenty-three miles of streets, or forty-one miles of single line. When completed, these lines also will be leased and worked by the company. It will thus be seen that, when all the lines which are authorised in the city and suburbs are constructed, the company will have a system of about seventy miles of tramways traversing upwards of forty miles of streets, forming probably the most complete and extensive system of tramways in any city or town in the United Kingdom. A dividend of 2½ per cent. was declared.

Under the Acts authorising the construction of the city tramways and the agreement for their lease by the Corporation to the company, the maximum fares were fixed at 1d. per mile, with a minimum of 3d. for an inside passenger and 2d. for an outside passenger for a single journey. Provision was made for a maximum of 3d. to the city boundary or any extension thereof, and for a fare of 2d. in cars not proceeding beyond two miles from their starting-places. The lines outside the city boundary were constructed under Acts separate from those of the city lines, and provided a separate scale of fares. The directors of the Tramways Company contended that they were, under these circumstances, entitled to charge their fares to the out-districts as for two separate journeys,—one to the boundary and another in the out-districts. This contention has caused some dissatisfaction, and, yielding to representations made by the Health and Watch Committees of the Corporation, the Tramways Company have made certain concessions.

GENERAL BUILDING NEWS FROM THE PROVINCES.

Belper.—The Belper Public Hall has been commenced, and will, it is expected, be opened in October next. In April of last year the promoters (a limited liability company) initiated a competition, the result of which was that Mr. John Johnson, of London, was elected architect to the company.

Penzance.—The *Cornish Telegraph* states that arrangements have been completed for providing Penzance with a new post-office, which, in point of architectural effects, and extent and completeness of accommodation, will be superior to that of any town of similar size in the West of England. A large and convenient site has been secured in Market Jew-street, and on it is to be erected a three-storied building, the ground-floor of which will be devoted to the work of the post and telegraph offices, and the upper floors to a residence for the postmaster. An outlay of about 3,000*l.* in site and building is contemplated. The site has a frontage of 50 ft. in Market Jew-street, and of about 90 ft. in Jennings-street.

Ilkeston.—A movement is on foot having for its object the building of a Church Institute at Ilkeston, Derbyshire. Plans are in course of preparation, and the Duke of Rutland has been asked to grant a lease of a piece of ground in the centre of the town, which was lately a portion of the old cricket-ground. The estimated cost of the building and its furniture is nearly 1,000*l.*

Wallasey (near Liverpool).—At a meeting of Wallasey Local Board, held on the 23rd ult., the Cemetery Committee presented a report recommending the adoption of a plan submitted by Mr. Grayson, architect, for one of the cemetery chapels. The chapel (the cost of which is estimated at 1,500*l.*) is to be jointly used by Churchmen, Dissenters, and Roman Catholics.

MASTERS AND MEN.

Lancashire Engineering Trades.—The recent concession of an advance in wages by the Iron Trades Employers' Association to the men employed in the engineering shops in the neighbourhood of Manchester and Salford has been followed by an extension of the agitation for a similar advance to several other Lancashire districts. The district committee of the Amalgamated Society of Engineers have also sent out a second circular stating that the employers of labour at mills, factories, dye-works, printworks, or works of a miscellaneous nature, where members of the society are employed and where wages have been reduced, will be required to restore the amount of such reduction from the 1st of March next. This applies to the reduction in wages in December, 1878, or on any subsequent occasion, or where the men may have started at the reduced rate. The returns just issued by the Iron Founders' Society show a decrease of 115 members on out-of-work donation as compared with last month, and the report adds that in some of their branches the members had realised an advance in wages. The reports sent in by the various districts connected with the Amalgamated Society of Engineers show a considerable improvement in trade.

The Employers' Liability Act.—Mr. Burt has brought in a Bill to amend the Employers' Liability Act, so as to render it compulsory, and that there shall be no power to contract out of it. The Act has been in operation for a year, and in many places the masters and men have agreed to work outside of it, and in no instance has there been any complaint made against the arrangement come to. In some districts the miners have adhered to the Act as it was passed, and in many others the contrary has been the case, the mineowners subscribing largely to a fund that made provision not only for accidents, but for sickness as well. In such cases the men are far better off than they would be were they placed under the Act. But Mr. Burt and those who are acting with him are evidently determined to give no liberty of action whatever to the working men, many of whom we believe will be found amongst the strongest opponents of the Bill brought in by the member for Morpeth. No fault has been found with the Act as it stands, and why it should be altered so as to meet the views of those who are not likely to come inside of its provisions we cannot understand.—*Mining Journal.*

BRIDLINGTON NEW CEMETERY.

THIS cemetery, which has lately been completed, was formed by the Burial Board for Bridlington and Bridlington Quay, is situated on the Sewerby road, near the old Priory Church, and is for the purposes of a cemetery for the whole district.

The designs of Mr. Alfred Smith, architect, Mitcheldean, Gloucestershire, were accepted in the late competition for the whole of the works. The buildings are in the Early Decorated style, and comprise entrance-lodge, &c., semi-detached chapels, with central carriage-porch, surmounted by a tower and spire 150 ft. high. The chapels, which are situated in the centre of the cemetery, are identical in arrangement, and each contains nave and apse, and spacious vestries, and accommodation for about seventy mourners. They are built on a series of arches or vaults which can be used for burial purposes. The general walling is constructed with brown Whitby stones, picked faced, with white Whitby stone dressings, and pointed; and the interiors are lined with red and yellow Scarborough bricks, with encaustic tile floor, the whole of the wood fittings being pitch-pine varnished. The roofs are covered with grey Carmarthen countess slating, with lead ridge-rolls. The lodge, which is situated in the north-west corner of the ground, is built with red and yellow Scarborough bricks, pointed, and roofed with grey countess slating in bands.

The general works have been carried out by Mr. J. Brown, Bridlington Quay; the carving was executed by Messrs. Birchenough Bros., Nottingham; and the ornamental ironwork was supplied by Messrs. C. Smith & Sons, Birmingham; the whole being executed under the superintendence of the architect and his clerk of the works, Mr. T. Pickering.

WOOD PAVING.

SIR,—In reply to Mr. Jacob P. Batch (p. 238), I beg to state that a bottom of sand and boards and wide-jointed pavement have just been taken up in Piccadilly. The Norwich example given is sand or gravel, thoroughly rammed and grouted,—with lime, I suppose. This surely will be wonderfully like badly-mixed concrete.

Let me assure Mr. Batch that his wood-paving might be cheaper if it had cost 12*s.* in place of 7*s* per yard. The foundation is the true road; wood is only a veneering.

R. RAWLINSON.

COMPETITION FOR SCULPTURE, ST. GEORGE'S HALL, LIVERPOOL.

SIR,—I regret to find that I inadvertently exaggerated the scale required in the designs for the compartments of St. George's Hall, Liverpool; but I think most persons will agree with me that the advertisement is capable of clearer statement. The closing paragraph, however, of "J. A. P.'s" letter, of last week, fully justifies the general imputation made in my letter of the 18th, of the want of acumen of committees of taste in regard to art matters. Does not "J. A. P." know that the greater number of drawings by Michelangelo and Raffaelle now in existence were, to all intents and purposes, *working drawings*, in the very same sense that the premiated designs will be, and that those drawings, after fulfilling their purposes, are still of priceless value? Fine designs, indeed, the premiated drawings would be if not worth preserving when the reliefs are finished! The use, the careful use, of a suitable set of designs would be a fair equivalent for the higher premium offered. The cartoons of Raffaelle were literally *working drawings*, and I think these have been found of some little value after this purpose had been fulfilled. I have yet to learn that modern artists have so outstripped the old masters that they are in a position to consider it as *infra dig.* to go in for work of a kind that Pnidias and Raffaelle did not consider beneath their genius. Why should the conditions of a competition, I should like to know, be framed to the level of second and third rate ability? Committees of taste, according to "J. A. P.'s" own showing, have yet to learn the art of enlisting first-rate talent. Pericles, the Italian popes, princes, and cardinals, found no difficulty in doing so,—and why? Because they knew in what good art consists, and what they really did want.

The very uncertainty of the consequences of entering a modern art competition deters able men from taking part in them. Any man capable of making a design suitable for the ends proposed would be competent to carry them out. If the terms of success carried the execution of the designs with it, would any man unable to carry out his designs compete, or, if he did, have any chance of success? I write in no captious spirit. I believe in competitions properly conducted. There is a general desire that art should be promoted; but there is something to be done, something to be remedied, ere art competitions will have the slightest chance of effecting the objects for which they have been instituted. DELTA.

SIR,—There seems to be a strange misapprehension of the meaning of this advertisement. Competitors are requested to send in not *fewer* than three designs for the larger panels and four for the smaller. You say, in a note, "This is not suggested in the advertisement."

If you will kindly turn to the advertisement on the second page of the *Builder* you will read these words:—"Competitors must submit not less than three designs for the larger panels and not less than four for the smaller." How the matter could be explained more clearly I cannot for the life of me understand. The panels might be fifty or 500, but only seven designs are required. J. A. P.

ROOF COVERINGS.

SIR,—In answer to "Ignomy's" queries, I would state my experience to be as follows:—Slating is better than galvanised iron for stables or other enclosed buildings where cattle are kept, as it is warmer, and admits a certain amount of ventilation. Slating can be made to resist wind-stripping, no matter how exposed the buildings may be, if proper care be taken that the slates are closely and properly bedded on each other,—that the battens are sufficiently stout (an inch at least),—and that nails of sufficient length, and with large flat heads, are employed. For buildings open on one side it is far preferable to close-board the roofs on the purlins, and use no rafters, as the cost is no more than the usual method, while the slates are free from damage through accident or mischief, and the wind has no effect upon them from the under-side. Tiled roofs for farm buildings,—unless sheltered,—are not so trustworthy. Poole's bonding tiles resist wind-stripping better than any others, and even these are not infallible in that respect.

Galvanised corrugated iron is less liable to damage than any other roof-covering material, is very light, and requires not above one half the timber necessary for a slated roof. It lasts longer in country districts than in towns, as the chemical action of smoke has an injurious effect upon it, and on no account should it be used near to where a steam engine is employed. Its greatest fault is its readiness to condense moisture in damp and changeable weather, the result of which is a more or less occasional dripping from the roof on whatever may be beneath, rendering galvanised iron an unsuitable covering for granaries, stables, corn and meal stores, or similar portions of a farmstead. On the other hand, for open sheds, covered stockyards, wagon and cart-sheds, and other buildings only partially enclosed, condensation is to a great extent avoided by the free circulation of air, and a slight occasional dripping is not of so much consequence. In many instances of this kind galvanised iron can be used to advantage. I have seen a roof so covered twenty-five years since that is as perfect as when erected, and the ammonia from cattle-yards and stock-buildings does not appear to injure it in the least. I believe, however, that a coat or two of Torbay oxide of iron paint applied previously to fixing is an extra precaution against decay. The "gauge" usually employed is from Nos. 14 to 18, B. W. G., but the thickness of the iron is of little consequence compared with perfect galvanising and thorough inspection previously to acceptance from the manufacturers. To quote a particular brand, or manufacturer, would, of course, be a gratuitous advertisement, but the best quality can be obtained through any respectable iron merchant in the usual way,—viz., by paying a corresponding price.

THOMAS POTTER.

CELLARS AND UNDERGROUND ROOMS.

SIR,—Attention having of late been drawn to the above subject, and to the duties of district surveyors in connexion therewith, and fresh legislation in the matter being more than probable, I ask your permission, in the interests of the public, to advert to two points in the working of the Act, which, it would seem, urgently call for notice.

According to a magisterial decision, I am told, only rooms used as separate tenements come within the operation of the Act.

This can hardly have been the intention, unless we are to suppose that the health of lodgers is of special importance.

Also, it appears to have been held that front rooms only are affected by the Act, this view being based on the clause which stipulates that at least 1 ft. of the height of the room shall be above the level of the pavement of the adjoining street. It seems to have been successfully argued that, as there is no street at the back, there can be no pavement-line to be regarded, and, consequently, that the law cannot be made to apply to back rooms.

The result of this apparently is, that whilst not even a single lodger can, with propriety, sleep in a front basement room, unless it be in strict conformity with the Act, the whole family of the owner may, if so minded, repose there, whatever its shortcomings, as serenely as circumstances will permit; while, as to the back room,—the small window of which, as often as not, is half blocked up with rabbit-hutches and the unsavoury dormitories of fowls, if not entirely covered in by a wash-house built out,—there would seem to be almost *carte blanche* to the family, lodgers and all, to "pig-in" *à la Russe*. G. M. D.

PLUMBERS AND THEIR WAYS.

SIR,—I feel it my duty, as a working plumber, to answer the letter that appeared in your last week's number, with respect to plumbers working to lines. I consider it would cost more for architects to get out lines and sections than the fitting and offering-up would come to; but I can assure you that a plumber who thoroughly understands his business, does work to lines of his own getting out. But at the same time there are many who call themselves plumbers who have no idea of even getting-out lines, much less of working to them; and hence the offering-up, scribing, cutting pipe to waste, &c. I have just been helping to fix three stacks of soil-pipe, with nine closets on each stack, under very difficult circumstances, and not one trap or length of the soil-pipe was ever offered up, but they were all prepared on the bench, and then taken to their places and fixed, and not one of them was ¼ in. out. All I can say is, that builders, &c., should be careful from whom they get their recommended men, as recommendations and references stand for nothing in our trade unless from thoroughly practical men. And I beg to inform "W. T." that, if he has a similar job to do, and will send me the width of closet opening, depth of joist, thickness of wall if the soil-pipe is outside, and distance from floor to floor,—no matter how many traps there are on the stack,—I will guarantee to get it all prepared in London, and make it fit to ¼ in. Then he will see that there are "plumbers" who work to lines of their own getting out. A WORKING PLUMBER.

*** Mr. Davies and another correspondent have sent us illustrated particulars of the way in which such work should be done from lines, but we do not think it necessary to go into the subject.

DISPOSAL OF SEWAGE.

SIR,—Surely something could be done by a persistent advocacy for an improvement in our drainage. At present (as you have stated in the *Builder*) we are liable to any amount of disease being bred on the shores of the Thames by the sewage deposits. Why it could not be collected on the marsh lands of Essex, and deodorised by the dry-earth principle, and so distributed by rail and river to assist the farmer in competing with foreign produce, it is difficult to imagine, and by filtration it would surely be possible to convert the bulk of the water into something fit to be returned to the river. With railway communication to all parts of the kingdom, a system of exchange might be arranged by which a farmer could send up so much earth and receive in exchange a certain quantity of valuable manure.

I have tried the dry earth system in England and Canada, and had most satisfactory results. Liquid sewage does not seem to pay, but the dry-earth mixture, I feel sure, would do.

It would be a splendid opening for a company to take up, and I feel sure that they would earn a fair dividend for their capital; and, besides this, be doing good to our fog-oppressed metropolis. I do not send this for publication, but only with the hope that you will bring your superior intelligence to bear on the subject.

AN ARCHITECT.

SHELTERS IN STREETS.

SIR,—Having read Sir Henry Cole's letter in your last issue, in which he advocates permanent covered ways or porticoes to private dwellings over the public footpath, I quite agree that they are a great convenience and comfort in bad weather, but absolutely useless when fine; and further, a permanent structure at a low level, which is necessary in order to be of any utility, is objectionable over a public footpath, for the following reasons:—

1. The structure would be liable to damage by the road traffic should it project to the edge of the pavement, as proposed.

2. The liability of vehicles running under them, which, in the case of a Hansom, would probably cause serious injury to the driver. But should columns be introduced at the outer angles, the latter danger would be greatly lessened. It, therefore, occurs to me that a sliding or telescope cover of light iron and glass that can be pushed over the footpath by a lever when required, would meet the case in every respect, and this plan could be adapted to any structure.

It ornamental, it should in all cases correspond as near as possible with the architecture or style of its surroundings. The advantages are as follow:—

1. That this roof or cover could be at a much lower level than a permanent one, thus materially affording greater protection to the visitor.

2. It is not likely to meet with equal opposition from the general public, Board of Works, or adjacent neighbours. JAS. C. GILMOUR.

Glass Shelters in Streets.—In connexion with the improvements at the Folly Theatre for Mr. Toole, there is a verandah, 40 ft. long, and projecting to the edge of the pavement. It is constructed of iron and glass, and supported from the building by four wrought-iron cantilevers, thus doing away with objectionable columns or supports which are a source of danger. It was designed by the architect of the building, Mr. J. J. Thomson, and the work was carried out by Mr. Joseph Stone, of St. George's Ironworks, Southwark.

LONDON SANITARY PROTECTION ASSOCIATION.

THE first annual general meeting of this Association was held at the Society of Arts on the 25th ult.

Professor Huxley, President of the Association, took the chair, and read the annual report, which stated that at the end of 1881 the Association had 192 members, 22 of whom were medical men, who had become members in respect of their own dwelling-houses, thus showing that the medical profession were alive to the advantage to themselves and their families of having the sanitary state of their houses attended to. The need for this attention was shown by the fact disclosed by Mr. Burton's reports that 6 per cent. of the houses inspected during the year were absolutely pestiferous, and it was by a marvellous chance that they had not been hotbeds of disease. In a much larger proportion of cases of inspection, more than two-thirds of the whole, there were, it appeared, general defects.

Mr. Timothy Holmes (the hon. treasurer), in presenting the balance-sheet, which showed a balance in hand of 74*l.* at the end of 1881, said that at the moment of speaking the Association numbered 232 members, and had a balance of 100*l.* in the bank.

Professor Fleeming Jenkin, as one of the consulting engineers, said the work of the Association, as carried out by Mr. Burton, the resident engineer, had been most satisfactory. He had been surprised at the bad state of London houses, which compared unfavourably with the state of houses in Edinburgh.

The adoption of the report and balance-sheet was seconded by Sir William Tyrone Power, who called special attention to the advantage to proprietors of hotels and lodging-houses of possessing a certificate from the engineer of the Association framed and hung up in some conspicuous position. The motion having been supported by Mr. E. C. Robins and others, was carried unanimously.

Mr. Robins particularly dwelt on the value of this Association to architects, and said that in his own case he bought a house and put in the drains himself,—new drains throughout,—but there was a smell in some of the chambers, which was unsatisfactory. He sent to the Association, paid his two guineas, and he got his two guineas' worth. The house had a tower, and all the closets,—three in number,—were in the tower. He was not able to get upon the roof of the tower, to test his own pipes by the soil-ventilating pipe; but Mr. Burton, the engineer to the Association, being young and active, ran up a ladder with a can of hot water in his right hand, his bottle of oil of peppermint in his left hand, and his bag in his teeth, walked along the sloping roof of the tower, and poured his peppermint and hot water down the soil-pipe. On entering the rooms to discover where the leak could be, it was found between the first floor and the ceiling.

Various votes of thanks concluded the proceedings.

SKILLED WORKMEN.

SIR,—I have to thank you, as one who can fairly lay claim to the title of a skilled workman, for opening your columns to this discussion, and to beg you not to allow it to close till something is done to remedy the present state of things.

As an apprentice, workman, trade-unionist, foreman, clerk of works, and surveyor, and for twenty-two years of my life in responsible charge of workmen, and having given this labour question some consideration, you will, perhaps, allow me to say a few words.

There is no doubt that workmen, as a rule, get worse and worse. Even those that are skilled do so little for the wages they receive, that the care and worry of those that have to be responsible for cost is unbearable. So far education has not helped, but rather hindered, technical education. Workmen I have had, with I know not how many grade certificates from South Kensington, who have utterly failed to set out a common skylight; and I have been pestered with men who consulted a price-book, and measured up their work each day, and if any complaint was made, told you how many yards they had done, and the usual trade price, forgetting all incidental office and other expenses an employer finds run up the cost. An examination of the causes for the present state of things shows that many explanations can be given.

The apprentice system is no doubt the best, but I fear this is gone for ever. No doubt the long struggle for supremacy between masters and men conduced to prevent parents apprenticing their sons to a trade.

The funds of schools where lads were educated available to apprentice them have been shamefully diverted from their proper purpose. I know one where the master tells the lads he hopes none will *disgrace* him by choosing a trade, most of his pupils being in the professions.

Here are the funds for a system of technical schools all over the country ready to hand; the premiums should be used in establishing model workshops, to teach lads how to use the tools of the various trades practically, not too scientifically.

The development of the railways, telegraphs, and various branches connected therewith, have withdrawn from the *trades* a large number of the intelligent, strong, active, in fact, the pick of the working class; to this must be added the police, where good conduct and intelligence open up promotion to be a superintendent with half the study requisite to make a good foreman.

There is another and more potent element—the contempt and dislike that the present middle class show for workmen, however intelligent; and this is repaid with interest by the workmen themselves, and is the most difficult and dangerous of the many causes, and it is of vital importance that it should be combated on every occasion.

The labour market is crowded with men and youths that would gain a good living if trained as skilled workmen, but who have been taught only to write and keep accounts, and are drawn out of offices by boys from Board schools, to be replaced in their turn by boys from other Board schools.

I have often been amused by the horror of "mamma" at one of *her* boys wishing to be a common carpenter! Surely, in this Christian country it should be no shame to follow the same calling as the Saviour of the world. I caught one of my youths, of a *respectable* family, packing his hand-saw in brown paper, as he thought it would disgrace him to carry it through the street.

This treatment of the workmen has driven many of them to emigrate, spending the harvest of their life in the Colonies, after being taught here, and returning, alas! in too many cases, to spend their helpless old age in an English workhouse. I am sorry to see some correspondents attribute this to the action of trade unions. At one time a unionist, I emphatically deny this. Trade unions never were strong enough for anything of this sort; the old trade traditions of non-unionists have done more harm than all the trade unions.

I am not an old man, but I can remember, as a child, seeing the workmen around the tommy-shop, and the ticket for clothes and food was a part of a contractor's weekly pay. In other cases men were kept waiting till seven and eight in the evening outside the employer's door for the small wage so hardly earned. Many workmen will remember when her Majesty called in the light gold; nearly all this loss in weight was taken out of the wage, and many a poor mother had to shorten her children's bread to find a contemptible profit for the employer; from daylight to dark, through all the week, the father of the family never saw his children except in bed.

The trade unionists of the past altered those things, and I am not ashamed to say I was one of them; at least, we have raised the workman that he can look his employer in the face and make his bargain as a man, and as long as it is kept in that path it could not but help the skilled workman. Any interference in the amount or quality of the work on their part, I counsel them, means ruin to them and the commonwealth.

It is from the nettle danger we pluck the flower safety; why not subsidise the trade unions, and offer them technical tutors and special advantages? Here you have the organisation, and depend on it you would give them such an eye-opener as would lift them up to a higher level.

I fear building schools or technical colleges will do little good. I look with deep concern on the medical and scientific schools with their full-fledged M.D.'s that when called in cannot diagnose the disease, and are not sure if it is typhoid or whooping-cough; at the certificated and diploma'd teacher of agriculture that cannot tell a parsnip top from a carrot; at the flippant young architect that cannot tell oak from pine, or a stock brick from a red rubber; and at the certified teacher of building construction that asks me the use of a tilting fillet for slates. Drawing, drawing, always drawing, will never make a skilled workman, nor will gazing at 2-in. cubes teach him to judge materials. There is no royal road, but competent teachers will do a great deal; and to you, who have done so much, I look for assistance in this important national work.

R. P., C. W.

SIR,—Kindly afford me space briefly to reply to some of the statements made by your correspondent, "One of the Old School."

Your correspondent regrets the passing away of the old system of apprenticeship, the absence of any system of classification, and the advent of the contractor in the place of the skilled one-branch employer. Now, sir, while fully agreeing with "One of the Old School" when he points out some of the evils that have come out of the transition, yet I must assert that he is mistaken when he charges the trade unionists with either creating or perpetuating any of these evils.

I have had considerable personal experience of the old system, and know that between the cupidity of the employers and often the stupidity of the apprentice, it did not invariably produce the best results.

In regard to classification, workmen cannot (with justice to themselves) accept it until employers are willing to apply it in a more honourable manner than they have hitherto done. Their method of applying it gives a premium to inferior work, and leaves to the highly-skilled artisan this position,—he is only employed when superior work is to be done, dismissed immediately he can be spared, leaving to the less skilled and cheaper man the maximum of employment.

This is the system (not trade unionism) that creates and perpetuates the evils that "One of the Old School" deplores.

W. P.

UNSKILLED ARTISANS.

SIR,—I have read the letter in the *Builder* by "Common Sense," on the cause of the retrogressive and unskilful character of the artisans of our day, which he attributes to trade unions. He states that members are admitted into the unions without reference to their ability. In contradiction of this I quote from the qualifications of admission into the largest society of carpenters and joiners. Candidates must be in good health, have worked at the trade five years, *be good workmen*, of steady habits, and good moral character.

Then, he says it is well known that it would not do for a skilful mechanic to object to work side by side with an incompetent newly-fledged unionist. I should think not, or a non-unionist either. Surely "Common Sense" ought to know that every journeyman is under a master or foreman, or both, and that they (not the journeyman or the union) have the employing or discharging of his fellow-workmen. The fact is, we must look elsewhere for the causes of the bad workmanship we profess to be so grieved about. One very great cause of it is the speculating builder and those who support him; another, the system of contracting for works, which is only another kind of piecework. The list of tenders in your paper every week will testify that the lowest tender is almost invariably accepted. Now, sir, it is not in human nature to lose at a job, if it can possibly be avoided; and as competition is so keen, the lowest tenderers can rarely do the work properly for the price, and so the workmen are hurried on,—told to push it out and not stand particular, &c.

I have, during an experience of fifteen years, known many a good man found fault with, and in some cases discharged, for doing work as it ought to be done, and in a reasonable time; but seldom have known one discharged for turning out a bad job, if only he pushed it off in a little less time than usual.

JOINER.

BAGSHOT CHURCH TENDERS.

SIR,—Some of your readers will remember the announcement in your paper not long since that in the competition for this church the design of Messrs. Bromilow & Cheers, architects, of Liverpool, was accepted, and that the cost of carrying out their design was guaranteed not to exceed 3,000*l.* Builders willing to tender for the same were invited to send in their names and addresses. They were accordingly furnished with the quantities. The drawings could be seen at the office of the architects at Liverpool. Now, it might reasonably be asked if some arrangements could not have been made for their inspection in one of the rooms of the Bagshot Institute, seeing that these rooms had been used by the committee of the proposed new church. I venture to say this would have been considerably nearer to most of those who tendered than Liverpool. One might naturally come to the

conclusion that if their office had been in New York, builders might see the drawings by calling *there*. However, tenders were sent in, but the architects, lacking the courtesy of their profession generally, did not think it worth their trouble even to acknowledge them by forwarding a list of tenders, or publishing them, although asked to do so. There certainly could have been no reason for withholding these unless their publication would have made known the fact that the figures were conflictive with the guarantee which had been made known through the *Builder* and elsewhere. Having seen the drawings and carefully priced-out the quantities, I venture to say, and I am not alone in this view, if the drawings are carried out, and in accordance with the quantities, the committee must be prepared to advance considerably beyond the guarantee. Their opinion, of course, will be formed when all the tenders are submitted to them; not, as at their last meeting, only one. Surely, the committee might know, if the builders are not to be entrusted with the secret.

Your readers will admit the fairness of the request that builders who devote their time and money in preparing an estimate should at least receive an acknowledgment of the same and a list of tenders.

X. C.

BUILDING IN CEMENT AND MORTAR.

SIR,—I have read with interest the article on the above in your issue of the 28th ult. Undoubtedly the reason the sample gauged with sea-water eventually became the strongest was in consequence of the saltness keeping the material damp, and thereby checking the hardening or setting.

I have on several occasions carefully read articles in your journal on tests of cements and limes, but I have by experience found that to obtain really strong tenacious brickwork, in either cement or mortar, the simplest and best method is to use wet materials and stiff-made mortar or cement. The materials, being wet, harden or set slowly, and, instead of drying into dust, as mortar does when bricks are used dry (sometimes even fresh from the kiln), the whole mass sets firmly and much more evenly together, and the mortar, instead of being detached, will adhere to the bricks so tenaciously that if the mortar were made with some of the best limes in general use, and of reasonable proportions, it would be impossible in many cases to clean the bricks after a few years.

The same may be said of cement, especially Portland. Portland cement used with dry porous bricks, &c., although setting apparently very hard and quickly, in a few years frequently falls off in scales, and more especially after frost, and simply because it never firmly adhered to the dry bricks, or other material used.

The same may be said of the pargeting to flues,—an important matter.

Many of the fractures seen in new buildings are caused by the rapid hardening of the mortar and cement, producing uneven settlements. Hardness in mortar or cement is not a real proof of strength. There is in good mortar and cement a toughness; also grouting every third course is now, I believe, little practised. It will be a very dusty job pulling down buildings erected in this manner, the mortar being made into thin liquid (and thereby much reduced in strength), and poured on dry materials. The particles of mortar not absorbed dry into dust.

The mortar in ancient buildings being of such good quality, and retaining its tenacity, is undoubtedly due to the materials being wet when applied. The slow progress of those buildings no doubt greatly added to their stability. The walls, although so old, are generally proof against dampness in wet seasons, not like the walls of the present century buildings. It does not so much depend upon the thickness of the walls, as on the porosity of the materials used. The quality of the labour being very different from that of the present had much to do with the soundness of the structure, the interstices being well filled with mortar, not as at present in most cases left open. But I will not say any more at present as to inferior labour, as I have given my opinion thereon before.

Some of the numerous readers of your journal may doubt some of my statements, but I have found ample proofs of what I state in the construction of a very extensive building.

G. R.

Industrial and Sanitary Exhibition at Sunderland.—Referring to our notice of this in the last number of the *Builder*, we understand that the Exhibition has remained open during the current week with great success, large numbers attending daily. One of the new inventions has been "The Ord" Patent Gas Engine, exhibited by Henry Wurr & Co., of 3, Blomfield-street, London-wall, London, who are sole licensees for the United Kingdom. This has received great attention from a numerous class of the public, being adapted for many purposes where small motive power is wanted at a moment's notice for driving sewing-machines, churns, chaff-cutters, printing-machines, hair-brushing machines, sausage-making machines, and so on.

THE QUESTION OF DRIPS.

SIR,—On reading Mr. Christian's address to young architects, it struck me with the straightforward and business-like manner of delivery, and if young students were to take the hints given, there would not be so many broken contracts as there are. But there is one point on which I should like to express dissent. Mr. Christian says, in writing a specification, the young man should not say, "Provide for the necessary drips in the lead gutters," but should always state what drips are necessary. Now, I venture to say that drips are an evil in any roof, and should be avoided.

I have had great experience in roofs, and at several large houses round Primrose-hill there have been leaks in the roof, and slaters, plumbers, and carpenters, have been sent up to see what was the matter. The plumber suggested a new gutter, the slater re-slating, and all at a fearful cost. I was told that for years this leak had been going on, and could not be found out. On examination, I found the roof, the gutter, and the slates all seemed good, and yet there was a leak in the roof. I ordered the slater to take a few slates off on each side of the drip, which was in the centre of the roof or gutter. It was a 1½ in. drip. I then took the lead up at the drip, and there was the evil; the under sheet was worked so thin that a hole was worn through at each corner, and the top one cut through at the edge of the drip. I took the old lead up 6 in. from the top side of the drip, and 1 ft. 6 in. from the under side of the drip; then I cut a groove across the boards in the gutter, 1½ in. wide, and dished it out; then dressed the edge of the old lead into it; then I got a block of wood, 1½ in. thick, 15 in. long, and the width of the gutter, and had it cut like a wedge, 1½ in. at one edge and nothing at the other. I put that into the gutter; then I got a piece of new lead, 2 ft. long, and the width of the lead in the gutter, and dressed each end of it into the groove; then made a plumber's wiped joint over it. There was a smooth gutter at once, and an evil that had stood for years was cured. I have had at least forty houses round the Hill done that way, and cured them all.

In new houses I avoid drips as much as possible, for the plumber in dressing 6 lb. lead into the corners, draws it out so fine and dresses it so close into the corners that the lead is very thin in the corner, and in time it wears through, and the roof leaks. It often happens that the leak at the drip will run along a ceiling joist, and make the ceiling wet at the wall, and a man is called in, and he says it is the fillets that are defective; he gets a job to repair all the fillets, but he does not stop the wet.

I put a gutter to a large roof two years ago, the gutter running along the west side of the house and round the south side, and about 12 ft. along the east side to the outlet; now that was about 72 ft. run. I had a 7½ in. fall from the top end of the west side to the outlet, and *no drips* at all, and I have watched it in the fiercest storm, and I cannot see any water in it, all of it seems to slide off so easy and so even that I cannot see it. Through all that snow last year we had no overflow, nor no soaking of rain through.

CHARLES SPENCE.

NEW OFFICES FOR THE LEICESTER UNION.

IN the competition (limited to members of the Leicester Society of Architects practising in Leicester) instituted by the Guardians of the Leicester Union, for designs for a proposed new board-room and offices, to cost 5,000*l.*, eleven sets of plans were sent in. Messrs. Redfern and Sawday have obtained the first position. No money premium was offered for the best design, it being a condition that the author or authors of the design so placed would be entrusted to carry out the work, the remuneration being 5 per cent. on the expenditure. The premium of 20*l.* offered for the second-best design has been awarded to Mr. J. B. Everard, and the premium of 10*l.* for the third-best design to Mr. J. Tait. We understand that Mr. Murgatroyd, of Manchester, was called in to advise the Board in making the selection.

The design selected for execution is Classic in character, the materials used externally being red brick with stone dressings. The building will be erected on land which the Board have acquired in Pocklington's-walk, and will have three frontages, one to the walk, one to Rupert-street, and the third to the angle of Rupert-street and Chancery-street, its cost being estimated at between 5,000*l.* and 5,500*l.*, exclusive of the site. It will be two stories high.

The Oldham School Board has appointed Mr. Thomas Mitchell, F.S.A., architect for their schools at Waterhead. The Corporation has placed the property presented by Mr. Bowker for a free library and gymnasium at North Moor in the hands of the same architect for necessary alterations.

CONTROLLING CLAUSES IN ASSIGNMENTS.

WORSLEY *v.* SWANN.

THIS was an action (before Vice-Chancellor Hall, High Court of Justice, Chancery Division), by Sir William Worsley and his trustees to restrain the defendant from proceeding with the erection of a circus and a model lodging-house or "Peabody building" on a piece of land in the city of York.

The land in question had been sold by the trustees, subject to a covenant, entered into with them by the purchaser, that "any building which might be built upon the land should not be used otherwise than as and for a private dwelling-house," or for any objectionable purpose. It was not denied that the defendant had been erecting the buildings complained of, but he contended that in so doing he was not committing any breach of the covenant, inasmuch as he was entitled to erect any building he pleased upon the land, provided he did not use it in contravention of the covenant. However, he was quite willing, and had submitted at an early stage of the proceedings, to stop the building of the circus; but he urged that the erection of a building to be used as a model lodging-house was not within the restrictive covenant.

The Vice-Chancellor said that, for the purposes of granting an injunction, the plaintiffs were entitled to complain of the erection of any building which was manifestly intended to be used otherwise than as a private dwelling-house. He also held that the terms of the covenant were sufficiently wide to prevent the user of any building to be erected on the land as a model lodging-house.

THE LAW AS TO DAMP HOUSES IN SCOTLAND.

TOWERS *v.* YOUNG.

THIS case, heard in Falkirk Small Debt Court on the 22nd of February, is reported in the *Falkirk Herald*.

The plaintiff, Mr. Towers, of Grahamston, sued the defendant, who had been a tenant of his in Russel-street, for the amount of a half-year's rent due by him at Whitsunday, 1881.

Mr. Gibson, solicitor, stated in defence that the house was so damp as to be uninhabitable, that it had been certified by Dr. Haig and by the sanitary inspector to be so, and that defender consequently left it shortly after the new year, and was not liable for the rent. In support of his case there were examined, besides Dr. Haig and Mr. Neilson, sanitary inspector, and other witnesses, who spoke to the unhealthy condition of the house.

Mr. Wilson, solicitor, for pursuer, stated, and the pursuer and his daughter gave evidence to the effect, that Young had taken the house knowing it to be a damp one, and that this being so he was not entitled to leave the house without paying the rent, or at all events that he was bound to pay rent for the house during the time he had occupied it.

The Sheriff did not entertain this view, but decided that the house was uninhabitable, as had been shown by the evidence, and that Young was not liable for the rent; assoilzied the defender, and granted 15*s.* of expenses. His lordship also remarked that there was the presumption that Mr. Towers could have been pulled up, under the Public Health Act, for renting such a house.

CHURCH-BUILDING NEWS.

Paddington.—H.R.H. the Princess Christian has laid the foundation stone of a new parish church for Paddington, to be erected on the site of the present Church of St. James, Westbourne-terrace. The new building, which will be of late fourteenth-century Gothic style, is from designs of the late Mr. Street, and will be carried out under the immediate supervision of Mr. Arthur E. Street and Mr. A. W. Blomfield. It is estimated that the church, which is intended to accommodate a congregation of 1,300, and which is to be finished by November next, will cost about 14,000*l.* The walls are to be of brick with black flint facings and Bath stone dressings, the interior to be fitted with oak seats.

Incorporated Church-Building Society.—At the last monthly meeting of this society, grants of money were made in aid of the following objects, viz.:—Building new churches at Gloucester (St. Paul), 200*l.*; Holly Hall (St. Augustine), in the parish of Dudley, 200*l.*; and Penrhiwceiba, in the parish of Mountain Ash, near Aberdare, 100*l.*; rebuilding the Church of Cray (St. Ilid) in the parish of Devynock, near Brecon; enlarging or otherwise improving the accommodation in the churches at Abergorleck, in the parish of Llanbyther, near Carmarthen; Ashill St. Mary, near Ilminster; Bunhill-row (St. Paul's), Finsbury, Middlesex; Pentraeth (St. Mary) near Menai Bridge, Anglesea; and Washington (Holy Trinity), near Fence Houses, Durham.

Books.

Album of Decorative Figures. By J. MOYR SMITH. London: Sampson Low & Co. 1882.

WHAT is a "decorative figure"? The phrase is so loosely used now that it certainly needs definition. We should say that the phrase, if it is to have a distinct meaning, implies the use of the figure in a conventionalised treatment, for the purpose of making it assume its place as part of a scheme of decoration, and harmonise with the rest of the work without predominating over it; and the idea also includes the conventional treatment of the figure in reference to the material which is employed, reducing it to such a degree of non-naturalism that it may be within the capabilities of that material, if it be (as in decorative work it generally must be) a material not affording opportunities for attaining realism. In regard to the place of the figure in the scheme of decoration, it is obvious that a figure which is to play such a part must not be endowed, so to speak, with too high a life or too intellectual an expression; in such a case it will rise to the level of a picture, and will appear to be unworthily treated in being mingled with decorative work and made a part thereof. The figure, as part of decoration, should express some easily apprehended and simple phase of feeling, or some special beauty or effectiveness of pose; or it may be introduced simply with the object of showing the fine lines of the figure for the sake of their own beauty, without giving any special expression to the face at all. In any case, it must not express strong emotion or violent action or impulse; for the first raises it above decorative level, and the second disturbs repose, and may even in time become an annoyance to those who have it constantly before their eyes. And as in almost every decorative use of the figure the material itself is likely to be such as to preclude delicate modelling (where the representation is pictorial and not sculptural), there is additional reason for the greatest attention to be paid to outline, by which alone the desired expression and character can really be conveyed.

We do not consider that all the figures in Mr. Moyr Smith's book by any means come properly under the definition of decorative figures The compartment of a frieze in the Sanatorium at Virginia Water, for instance, is much more what may be described as a fresco picture of three figures; the figures are connected together, it is true, by a conventional wall and foliage (not very conventional either) filling up the background, but they are, as far as attitude and dress go, realistic figures sitting on realistic seats, and we do not call them decorative,—they are pictorial. Figures treated in this kind of position, and with this kind of object, must be more idealised, more removed from the reminiscences of real life; they must be figures in the abstract, and belong to no time or place. This is better done in the subjects representing "Legend," "History," and "Epic Poetry," Plate IX, also part of the aforesaid Sanatorium decoration: here the figures are purely abstract, and their costume likewise, and they consequently serve to represent suitably an abstract idea. In connexion with these and some others in the book, it may be observed that Mr. Smith's decorative or conventionalised architecture is generally good, and combines effectively with the figures. The set of designs representing trades, on Plate XVII., are also good examples of decorative figures, and would come in well at the salient points of a conventional wall decoration. The figures of some of "The Months," on Plates XIII., XIV., are in one sense excellent illustrations of the true method of connecting the figure with decoration, each figure being drawn across the centre of a circular background or nimbus, as we might call it, inscribed with conventional ornament; but then the figures are not nearly conventional enough for the background, to which they do not seem to belong; they are semi-grotesque figures in realistic costume, though not the costume of to-day. Mr. Moyr Smith, no doubt, may say that they are intended as jokes, to which we should answer that they are not very good jokes, and that they are certainly not beautiful; and it does seem to be one object of the use of the figure decoratively to produce the impression of beauty. Mr. Marks has set rather the fashion of a run on the grotesque lately in decorative painting, and illustrated it, we need not observe, very cleverly and with much humour; but for all that, we think that this kind of thing is better suited for what is called *genre* painting, where the object is the realisation of human character, than for the decorative treatment of walls, where such grotesques seem to us to be somewhat impertinent and irritating rather than decorative; we certainly should not care to have our walls so decorated.

The two long panels, Nos. XXXI. and XXXII., a scene from "Twelfth Night" and one from "Henry VIII.," are really decorative paintings with decorative backgrounds, in which the conventionalised architecture is very well treated, and in the "Henry VIII. scene, "Queen Katharine and her Maidens," the artist has been very successful in the drapery of the figures, which falls in very graceful and at the same time natural folds.

Illustrated Handbooks of Practical Art. Art-Work in Gold and Silver. By HENRY B. WHEATLEY, F.S.A., and PHILIP H. DELAMOTTE. Art-Work in Earthenware: same authors. London: Sampson Low & Co. 1882.

THESE are two of a series of "Illustrated Handbooks of Practical Art," the object of which is "to bring to the notice of students and amateurs of art, as well as all lovers of the highest excellence in workmanship, numerous examples, both ancient and modern, of the application of beautiful design to articles of every-day use and to the various objects which are frequently employed for purposes of decoration." Each handbook will contain an historical record of the progress of the art of which it treats, from the earliest times to the present, and will be illustrated with from forty to sixty engravings.

The two specimens of the series which we have before us promise very well, so far as such intricate chapters in art can be treated in so small a space. The illustrations are well chosen and well engraved, and the historical portion seems well written and condenses a good deal of information into a small space. We observe that in the "Gold and Silver" volume the authors have fallen into the popular error of describing a bishop's pastoral staff (of which class of article a fine illustration is given) as a "crozier." A crozier was a staff with a small cross, not a crook, at the end, and was the ensign of an archbishop. The bishop's staff with the crook at the end was indeed called "crosse d'évêque," probably because it was the substitute in the bishop's hands for the actual cross which was carried by the archbishop; but it was never called a "crozier."

On the Preservation of Life and Property from Fire. By JAS. HENRY HEATHMAN, Fire Engineer. London: Simpkin, Marshall, & Co. 1882.

WE agree with Mr. Heathman in believing that in publishing this book he is conveying information which possesses intrinsic value for the benefit of persons owning or having interest in the management of warehouses, factories, stores, docks, wharfs, banks, mansions, hotels, clubs, colleges, hospitals, asylums, workhouses, barracks, gaols, and other buildings, including even the ordinary private dwelling, and as, in almost every instance, a person's property depends for its happy immunity from fire upon the care and attention of the servants and others about him, and as the majority of fires owe their origin to some action or omission, accidental or otherwise, on the part of an *employé*, benefits will undoubtedly accrue from employers' distributing copies of this work among those persons to whom they have to look for the preservation of their property and interests.

The author is a practical man, and the little book is full of useful suggestions, the importance of which has been brought home to him by experience.

Miscellanea.

Society for the Fine Arts.—On Tuesday evening the Lord Mayor and the Lady Mayoress gave a *conversazione* at the Mansion House, in connexion with the City of London Society of Artists and the Society for the Fine Arts. The Mansion House was decorated, and the electric light (that of Mr. Crompton) exhibited the pictures and statuary to good advantage. During the evening some vocal and instrumental music was given. The arrangements were made by Mr. Deputy Edmeston, Mr. E. W. Parkes, and Mr. J. R. Dickson, the curator of the works of art belonging to the Corporation.

"Upton Royal" (late Slough).—At Slough, Bucks, last week, a meeting of the residents was held, under the presidency of the Rev. P. W. Phipps, the vicar, for the purpose of considering the desirability of altering the name of the village to Upton Royal, and memorialising the Postmaster-General and the Directors of the Great Western Railway to use the same instead of that of Slough, which it was said gave people a bad impression of its sanitary condition. Mr. Frederick Charsley, registrar of Eton College, who had convened the meeting, explained that the name of the village had originated many years ago in consequence of the bad condition of the Bath road, boards having been placed in the vicinity to warn travellers to proceed "slow," the latter word having afterwards developed into "Slough," which, according to Johnson's "Dictionary," meant a deep miry place, a hole full of dirt. Some objection was made to the alteration of the name, but eventually Mr. Charsley proposed, "That in the opinion of the meeting the portion of the parish of Upton-cum-Chalvey, now called "Slough," should in future be named Upton Royal. The motion was seconded by Mr. Springall Thompson, county magistrate, who thought the change of title would be most desirable and beneficial to the locality. Mr. Elliman protested against the change, and was supported by Mr. Herbert, the latter proving that the name was very ancient, the village having been called "Le Slowe" as far back as 1440, when Eton College was built, the bricks for which were made at "Slowe" 442 years ago. At the close of the discussion, Mr. Charsley's resolution was carried amid cheers. The town has since been placarded with the announcement that "The name of this town is now 'Upton Royal.'" It remains to be seen whether the Post Office authorities and the Great Western Railway Company will fall in with the views of the promoters of the change. It seems that an abortive attempt was made some years ago to change the name of the town to Herschelville, after the great astronomer, Sir William Herschel, who resided there. There appear to be about thirty "Uptons" in England, but only one "Slough." The change is absurd.

Recent Advances in Photography.—Captain Abney, F.R.S., delivered the fourth and last of his course of Cantor Lectures on this subject in the hall of the Society of Arts last week. He showed that a positive picture could be obtained by light in the camera by means of a preliminary exposure of a plate to white light, and then treating it with a solution of potassium bromide, subsequently exposing it to the image formed by a lens. From this was deduced the fact that a plate prepared with excess of soluble bromide became sensitive in proportion only to the absence of the latter salt. The lecturer predicted that more rapid plates than were now got would be forthcoming by eliminating the soluble bromide altogether. The destruction by oxidation of the photographic image was then vividly demonstrated, as well as the reversal of the image on gelatine plates, of which phenomenon an explanation was given. The use of sensitometers for measuring the sensitiveness of plates was dwelt on, together with the use of photometers for measuring the degree of exposure required for landscape subjects. The phosphorescent spectrum was thus introduced, with illustrative experiments of great beauty. Instantaneous shutters were next alluded to, and the method of securing a register of their rapid action by means of a simple arrangement with a tuning-fork. The application of photography to a particular branch of science was exemplified in some capital generic photographs illustrating types of families and classes of men. Sir F. Bramwell, in proposing a vote of thanks to Captain Abney, spoke highly of the interesting and instructive character of the course of lectures just concluded.

Coventry is about to erect, by public subscription, a statue in marble of Sir Thomas White, a London merchant, who was Lord Mayor in the time of Queen Mary. He gave a large bequest for the benefit of the young freemen, and other citizens of Coventry, in 1542. Messrs. Wills, of London, are the sculptors.

Sir Walter Scott in Rome.—A number of the leading families of Rome, including the Dorias, Colonnas, Stozza Cesarini, Odescalchi, and others, under the presidency of the young Duke of Sermoneta, have resolved to place a memorial tablet on the house in which Sir Walter Scott resided during his stay in that city.

District Surveyors.—At the meeting of the Metropolitan Board of Works on the 24th ult., a report was presented by the Building Act Committee recommending that, in the opinion of the committee, the two vacant districts of West Wandsworth and of East Wandsworth and Tooting Graveney, should be offered in the first instance to some of the existing district surveyors, and recommending that the Board do, on Friday, the 3rd prox., at one o'clock, p.m., proceed to make the appointments from the following gentlemen:—(*a*) Mr. G. Aitchison, district surveyor of Woolwich; (*b*) Mr. T. Roger Smith, district surveyor of St. Saviour's, Southwark, &c.; (*c*) Mr. J. B. Redman, district surveyor for the Tower Liberty. Mr. Deputy Saunders moved the adoption of the report; but Mr. Richardson contended that under the resolution of the Board the committee had no power to submit the names of any gentlemen as candidates for the two vacant districts, and submitted, as a matter of order, that the motion for the adoption of the recommendation contained in the report could not be put. The Chairman said he thought the committee had somewhat exceeded their powers, and suggested to Mr. Deputy Saunders that he should move the adoption of the report, but stopping at the words "district surveyors." Mr. Deputy Saunders said he would adopt this suggestion, and the motion, thus amended, was agreed to, The Board further resolved, on the motion of Mr. Deputy Saunders, to proceed to make the appointments at its meeting on March 10, and Mr. Freeman moved further that a circular be addressed to all existing district surveyors informing them of the intention of the Board, and inquiring if they desired to become candidates for either appointment. This proposition was also agreed to.

The New Ashton Fish Market, which has been in course of erection during the past twelve or eighteen months, was formally opened last week by Alderman James Walker, the chairman of the Market Committee. The alterations and additions which have been carried out, at an expenditure which in the aggregate will amount to 6,000*l.*, have resulted, we are told, in the provision of one of the best-arranged and one of the most suitable fish markets in the North of England. Externally the building is of pressed bricks, with polished stone dressings, the two entrances having very handsome polished stone gateways, with pilasters and richly-carved capitals, the spandrils over the arches being enriched with carvings of fruit and birds, &c. Internally the fish market is a spacious hall, 114 ft. long by 30 ft. wide, lighted principally from the roof, which is of cast and wrought iron, boarded underneath to form a ceiling and picked out in colours, the walls being lined throughout with white enamelled bricks relieved by a dado line of pale blue. The stalls have Sicilian marble tops, and wrought iron racks are provided for rabbits and game. Mr. William Neal, of Ashton, is the contractor for the whole work, which has been carried out to the designs and under the superintendence of Messrs. John Eaton & Sons, architects.

The Royal College of Music—Under the presidency of the Prince of Wales a large and highly-influential meeting for the purpose of soliciting public support in aid of the foundation of a national institution for the cultivation of music, was held on Tuesday morning at St. James's Palace. The chairman having spoken at considerable length, the Duke of Edinburgh moved a resolution expressing approval of the proposal to establish a Royal College of Music as a national institution, and pledging the meeting to make the utmost exertions individually and collectively to forward the movement by obtaining the necessary funds for founding and endowing a College of Music for the British Empire. This resolution having been seconded by the Archbishop of Canterbury, and supported by Lord Rosebery, was carried unanimously. We have already expressed our views on the subject, and shall before long return to it.

Additions to the Head Quarters of the Metropolitan Fire Brigade—At the meeting of the Metropolitan Board of Works on the 24th ult., it was agreed to enlarge the accommodation at the head quarters of the Metropolitan Fire Brigade, Southwark Bridge-road, at an estimated cost of 20,500*l.*

The Construction of Electrical Railways in Germany, for industrial and other purposes, progresses rapidly.

Newspaper Press Fund.—The annual general meeting of this society, held on the 25th ult., was numerously attended. Sir Algernon Borthwick, a vice-president, was in the chair, and the proceedings were altogether satisfactory. The report stated that the roll now comprised 422 members, of whom 284 resided in London and 138 in the country. Of the whole 111 were life members. The number of applications by members or their representatives for assistance had been less than in several previous years. The committee had made fifty-one grants to forty-two persons, involving a total expenditure of 862*l.* His Royal Highness Prince Leopold, Duke of Albany, K.G., had consented to preside at the anniversary dinner, which is fixed to take place at Willis's Rooms, St. James's, on Saturday, the 24th of June next. The amount dispensed was smaller than usual, the applications being fewer.

Steam Digging.—A large party of landowners, farmers, and visitors assembled last week at Stevenage to see the operations of a new steam-digger, manufactured by Messrs. Proctor & Co., for the inventor, Mr. Parker. The object of steam digging is to reduce the cost of cultivating land, and to substitute for ploughing an operation which market-gardening has shown to be also more profitable. The digger was worked in a large field with great success, making with three forks, each carrying eight tines, cuts into the ground of 9 in. deep by 1 ft. in breadth, and turning the clods cleanly over for exposure to the air. The digging-frame is complete in itself, and carried a ten-horse Robey portable engine, which was mounted on it as its motive power. It is so constructed that backward motion is practicable as well as forward motion. The digging machinery can be applied to or detached from an ordinary portable engine. Mr. Parker's digger can be worked by one man, and will, it is said, turn up an acre of ground per hour at a cost of 2*s.*

Society of Engineers.—On Monday, the 6th of March next, in the Society's hall, Westminster-chambers, a paper will be read entitled, "Notes on Electric Light Engineering," by Mr. C. H. W. Biggs and Mr. W. Worby Beaumont. The leading feature is a discussion of some of the minor points which affect the successful arrangement of electric lighting plant, as the heating of the wires of dynamo-machines, internal and external resistance, comparative resistance of various conductors, lamps in series, and in multiple arc, and calculations employed in arrangement of the lamps, &c.

Uniformity in Building and Sanitary Regulations.—Mr. Goldstraw writes to say that the report in last week's *Builder* of the discussion at the Institute on this subject contains a slight inaccuracy. With respect to the London system of district surveyorships, he was represented as saying that Mr. Aldridge, President of the Liverpool Architectural Society, was of the same opinion as himself; whereas, he really stated that Mr. Aldridge was of the same opinion as Mr. Boult.

Tell's Chapel.—The monumental decorations of Tell's Chapel are rapidly approaching completion, under the master-hand of M. Stackelberg. That gentleman calculates that his work, which has occupied him for several years, will be finished in the course of the coming summer. Thereupon, the chapel will, as soon as possible, be opened to the public, and will, doubtless, be the object and aim of many a trip to Switzerland.

Building Exhibition in Birmingham.—Mr. J. Black informs us that he has been induced by the success of the Building Exhibition held in London under his management to arrange for one of the same character, but more extended in scope, at the Bingley Hall, Birmingham, to take place from April 17th to May 6th inclusive.

Life-saving Apparatus.—An Exhibition of Means and Appliances for the Protection and Preservation of Human Life, to be held at the Alexandra Palace, Muswell-hill, is being organised. It promises to be both important and interesting. Mr. Lawrence Saunders, C.E., is the hon. secretary.

German Evangelical Church in Jerusalem.—It is intended, by the German authorities, to erect a new Evangelical Church in Jerusalem, and for this purpose the Emperor has approved of additional collections being made in the churches of Germany, and in other ways.

Diocesan Architect, Oxford.—Mr. John Oldrid Scott has been appointed to fill the post of Diocesan Architect at Oxford, left vacant by the death of Mr. Street.

TENDERS

For Beeston sewerage, Contract No. 1. Mr. Herbert Walker, engineer. Quantities by Messrs. Hodson, Price, & Hodson:—

Meats Brothers	£11,000 0 0
H. Lovatt	8,899 0 0
W. J. Butterill	8,777 0 0
W. Pollett	8 544 0 0
F. Dawson	8 5 0 0 0
J. Kitchen & Co.	8,310 0 0
A. Faulks	8,25 0 0
G. Cowdery & Son	8,2 0 15 6
J. Briggs	8,150 0 0
J. Coupe	7,995 10 0
Carrall & Lewis	7,985 0 0
Cook, Bennett, & Shaw	7,9 0 0 0
T. Smart	7,881 7 2
W. Rigley	7,700 0 0
W. Holland	7,541 19 7
Hill Brothers	7,523 0 0
W. Cordon	7,500 0 0
J. W. Pickthall	7 214 15 6
A. Palmer	6,9 4 0 0
J. & G. Tomlinson	6,8 0 0 0
Sotheby & Son	6,613 15 2½
Geo. Hunter & Co.	6,526 0 10
Foster & Barry (accepted)	6,205 10 6

For alterations and additions at Nos. 14 and 16, High-street, Islington, for Mr. H. F. Porter. Mr. Rowland Plumbe, architect:—

Payne & Son	£493 0 0
W. Mead	49 0 0
F. Smith	466 0 0
Hogben & Co.	4 0 0 0
W. Royal	433 0 0
J. Quincey	375 0 0
Dearing & Son (accepted)	347 0 0

For the erection of Tredown villa residence and stabling, Sydenham, for Mr. Sydney Smith. Mr. Pawley, architect:—

Smith & Sons	£1,195 0 0
Kemp	1,10 0 0
Smith & Appleton	1,115 0 0
Hollidge & Stuart (accepted)	1,054 0 0

For the erection of the Priory Board Schools, for the Acton School Board. Mr. Edward Monson, architect:—

Smalley & Stafford, Old Kent-road	£9,415 0 0
W. Crockett, St. Pancras	9,000 0 0
E. F. Kearley, Uxbridge	8,976 0 0
J. Tyerman, Walworth-road	8,682 0 0
Jones & Co., Gloucester	8,3 0 0 0 0
W. Olarey, Kensal-road	8,182 0 0
C. W. Cross, Shepherd's-bush	8, 95 0 0
J. Dorey, Old Brentford	8,037 0 0
T. Brunsden, New Brentford	7,947 0 0
H. Haynes, Alperton	7,8 0 0 0 0
C. Claridge, Banbury	7,844 0 0
J. Longley, Crawley	7,5 8 0 0
D. Iveson, Northampton	7,548 0 0
W. H. Wheeler, Hammersmith	7,5 0 0 0
M. Rowles, Acton	7,424 0 0
G. Lyford, Hammersmith	7,348 0 0
C. Maton, Kew	7,299 0 0
J. Garrud, Hackney-road	7,267 0 0
W. L. Baber, Kensington Park-road	7,183 0 0
J. Cardus, Acton (accepted)	6,995 0 0

For Erdington sewers. Mr. H. Pritchard, engineer:—

Contract No. 2.—Cast-iron Pipes and Special Castings.

Stacey, Davis, & Co., Derby	£2,890 0 0
Butterley Iron Co., Alfreton	2,446 0 0
Cochrane & Co., Derby	2,159 0 0
J. & S. Roberts,* West Bromwich	2,055 0 0
C. E. Firmstone Brown,† Stourbridge	2,015 0 0
Staveley Iron Co., Staveley (informal)	—

* Accepted.

† Not accepted in consequence of failure to complete in stipulated time.

For new chancel, organ-chamber, vestry, and baptistery St. Paul's Church, Preston. Messrs. Myres, Veevers, & Myres, architects. Quantities supplied by architects:—

D. Tullis & Son	£2, 54 4 2
R. Heathcote	2,047 5 10
J. Walmsley (accepted)	2,029 8 3

For alterations and extension of premises, Exchange Buildings, and Dorrell-place, Brixton-road, for Mr. A. Philps. Mr. J. William Stevens, architect. Quantities supplied:—

Maxwell Bros.	£1,119 0 0
Taylor	1,101 0 0
Pack Bros.	1,064 0 0
Bolding	985 0 0
Smith & Son	936 0 0
Holliday	934 0 0
Axford (accepted)	927 0 0

For sundry alterations and additions to dwelling-houses, Ladywell Park, Lewisham, for Mr. Dalton Miller. Mr. J. William Stevens, architect:—

Smith & Son	£959 0 0
Mattock Bros.	941 0 0
Holliday (accepted)	721 0 0

For two warehouses, for Dr. Yarrow, in Old-street. Mr. Allen, architect:—

Brass	£1 617 0 0
Batty	1,519 0 0
Wall Bros.	1,489 0 0
Sabey	1,435 0 0
Lawrance	1,430 0 0
Harris	1,347 0 0

For building two warehouses, Windmill-street, Finsbury, for Mr. Thos. C. Usher. Mr J. Groom, architect. Quantities supplied by Mr. Mark W. King:—

Philps & Sisley	£5,43 0 0
Langmead & Way	4,947 0 0
Thos. Little	4,937 0 0
Conder	4,880 0 0
Stimpson & Co.	4,745 0 0
Bangs & Co.	4,490 0 0
Mattock Bros. (accepted)	4,5.5 0 0

For the construction of the Aston section of the Birmingham and Aston Tramways:—

Jacob Biggs (accepted)	£6,461 18 9

For painting, decorating, &c., to mayor's parlour, committee-room, passages and entrance-hall, &c., to Municipal Buildings, Southampton. Mr. W. B. G. Bennett, surveyor:—

Phillips	£115 10 0
West	107 0 0
Sandon	93 0 0
Fisher	86 0 0
Comport	85 0 0
Penney	84 12 6
Doggrell	83 10 0
Vaughan	75 10 0
Dowdall & Son	67 10 0
Oake & Sons (accepted)	62 10 0

For alterations and additions to house at Stow Park, Newport, Monmouthshire. Mr. E. A. Lansdowne, architect. No quantities:—

J. Linton, Newport	£415 0 0
Jones & Diamond, Newport	389 10 0
Jones & Son, Newport	387 0 0
J. Jenkins, Newport	379 0 0
W. Blackburne, Newport	319 0 0
J. Williams, Newport	315 0 0

For building mission church at Lliswerry, Newport, Monmouthshire. Mr. E. A. Lansdowne, architect. Quantities supplied:—

T. Prosser, Newport	£515 18 0
W. Blackburne, Newport	515 0 0
J. Linton, Newport	500 0 0
W. Richards, Newport	498 0 0
J. Williams, Newport	493 10 0
Jones & Son, Newport	464 16 0
G. Morgan, Newport (accepted)	460 0 0
G. Wilkins, Newport	454 18 0
Jones & Diamond, Newport	452 0 0
W. T. Siers, Newport	445 0 0
T. Williams, Newport	440 0 0

For a pair of labourers' cottages and a stable building, Ewhurst. Mr. R. Stark Wilkinson, architect:—

	Cottages.	Stable.
T. & G. Cumbes, Ewhurst*	£350 0	£182 10

* Accepted.

For additions to Napsley Farm, Ewhurst. Mr. R. Stark Wilkinson, architect:—

E. Holden, Cranleigh (accepted)	£800 0 0

For new fittings at the King's Arms, for Mr. Edwards. Mr. H. I. Newton, architect:—

Godden	£287 0 0
Beal	267 0 0
Pickersgill	249 0 0
Simpson (accepted)	192 0 0

Pewterers' Work.

Hellings	£127 15 0
Sanders & Sons	110 19 0
Watts & Co.	98 17 6
Heath (accepted)	97 0 0

For the erection of one pair of semi-detached residences on Ravenscroft Park, High Barnet, for Mr. Thomas Smith. Messrs. Brooking & Nelson, architects:—
Marriott Bros. (accepted).

For rebuilding Nos. 143 and 144, Aldersgate-street. Messrs. Collier & Merrin, architects:—

C. Wall	£5,700 0 0
Braid	5,300 0 0
Colls & Son	5,087 0 0
Ashby & Horner	4,936 0 0
Brass	4,919 0 0
Patman & Fotheringham	4,773 0 0
Perry & Co.	4,083 0 0
Morter	4,630 0 0
J. & J. Greenwood	4,579 0 0
Lawrance (accepted)	4,520 0 0

For rebuilding No. 21, Old Change, for Mr. Thos. Hicks. Messrs. Collier & Merrin, architects:—

C. Wall	£2,030 0 0
Colls & Son	1,987 0 0
Patman & Fotheringham	1,900 0 0
Brass	1,877 0 0
J. & J. Greenwood	1,853 0 0
Perry & Co.	1,778 0 0
Mortier	1,750 0 0
Lawrance (accepted)	1,698 0 0

For alterations and decorator's work at 20, Hertford-street, May Fair, for Mr. J. Corbett, M.P. Messrs. Collier & Merrin, architects:—

Builders' Work.
G. Brown, Bloomsbury (accepted).

Decorators' Work.
J. Taylor, Birmingham (accepted).

For sundry alterations and repairs at St. Thomas's Schools, Hackney-road:—

J. Jarvis & Sons (accepted)	£250 0 0

For new furnace-vault and hot-air flue, &c., at St. James's Church, Hatcham. Mr. J. T. Walford, architect:—

Lott	£172 0 0
J. Jarvis & Sons	155 0 0

For new cooperage, washing premises, loading and unloading stages, and paving, at the Brewery, St. Helen's, for Messrs. Greenall, Whitley, & Co. Messrs. Davison, Inskipp, & Mackenzie, architects. Quantities by Messrs. Curtis & Sons:—

J. Latham, St. Helen's	£4,814 0 0
J. Whittaker, St. Helen's	4,720 0 0
G. Harris & Son, St. Helen's	4,580 0 0
W. Harrison, St. Helen's (accepted)	4,364 5 6

For constructing roads, brick and pipe sewers, &c., on New King's-road Estate, Fulham, for Mr. J. P. Lange. Mr. A. C. Bean, surveyor:—

Ford & Everett, Westminster*	£4,550 0 0

* Accepted.

For new premises for the Burton-on-Trent Sanitary Steam Laundry Co., Limited. Mr. H. Blackwell, architect:—

Low & Sons, Burton	£3,160 0 0
Walker & Slater, Derby	2,135 0 0
Hodges, Burton (accepted)	2,090 0 0

For alterations to the Tower of London public-house, Cable-street, E. Mr. W. E. Williams, architect:—

Eaton	£179 0 0
Marr	145 0 0
Shurmur	135 0 0

For alterations and additions, No. 1, Bolton-row, Mayfair. Mr. G. Ashby Lean, architect. Quantities supplied:—

A. G. Bolding	£947 0 0
Myring	944 18 6
Adamson & Sons	815 0 0
Toms	723 0 0

TO CORRESPONDENTS.

W. H. T. (greater part of paper was illegible).—E. C. S. (what has occurred to A is no disproof of what has occurred to B).—W. P. (letter referred to has not reached us).—W. E. A. (sent too late).—M. Bros. (should have sent list and sums).—Manufacturer (we do not pretend to advertise every inventor or manufacturer who sends us in a prospectus).—C. S.—J. C. H.—J. G.—J. W. C.—W. & T. W.—A. J. G.—J. B.—J. D. C.—P. J. D.—E. C. R.—A. S. C.—E. W. W.—J. S.—J. J. & Son.—H. G.—W. & Sons.—C. & Son.—R. R.—J. H. H.—A. G.—C.—D. I. & M.—S. B. H.—S. G.—F. R. C.—J. R. & Sons.—T. M.—W. W. T.—R. & S.—C. & M.—J. H.—G. H. T. S.—E. M.—F. G. H.—B. & L.—T. & B.—T. W. S.—J. T. S.—H. W.—G. H.—W. C. A.

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